6. RISK FACTORS

Investment in the Units involves a substantial degree of risk and should be regarded as speculative. As a result, the purchase of the Units should be considered only by persons who can reasonably afford a loss of their entire investment. Prospective investors should carefully consider, in addition to matters set forth elsewhere in this Memorandum, the following factors relating to the business of the Company and this offering. The order in which risk factors appear is not intended as an indication of the relative weight or importance thereof. Prospective investors should carefully review all risk factors. Such information is presented as of the date hereof and is subject to change without notice. The discussion in this Memorandum contains forward-looking statements that involve risks and uncertainties. Actual results may differ significantly from the results discussed in the forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed below. The occurrence of any of these factors could materially and adversely affect the Company's results of operations or cash flow. Risks described herein that could affect KLC are also likely to be similar for other pre-K-12 businesses we may acquire or develop. Other businesses we acquire or develop in foreign countries or in different markets, may be subject to risks in addition to those discussed below.

6.1. Risks Related to Our Business

6.1.1 Risks associated with growth through acquisitions; potential inability to consummate transactions

A principal component of the Company's growth strategy is the acquisition of other businesses or interests therein that will complement and/or expand the Company's businesses and the products and services that they offer. The successful implementation of this strategy will depend upon a number of factors, including the ability to identify attractive acquisition opportunities, consummate such transactions on favorable terms and integrate the operations of the acquired businesses with those of the Company. Identifying, completing and realizing on attractive acquisitions are highly competitive and involves a high degree of uncertainty. The Company will be competing for acquisitions with other companies, private equity firms, as well as individuals and others, which often results in increased acquisition prices. There can be no assurance that the Company will be able to identify suitable acquisition opportunities or that if identified, the Company will be able to consummate such transactions on suitable terms, or that acquired businesses will perform as expected or generate returns.

In addition to risks facing education companies similar to those facing KLC as described herein, acquisitions of businesses also involve special risks, including risks associated with unanticipated liabilities and contingencies, diversion of Company management attention and possible adverse effects on earnings resulting from increased amortization of goodwill, increased interest costs, the issuance of additional securities and difficulties related to the integration of the acquired business. No assurance can be given as to the success of the Company in executing and integrating acquisitions in the future. The Company's failure or inability to successfully implement and manage its acquisition strategy would have a material adverse effect on the Company's financial condition, results of operations and business.

The Company may from time to time enter into negotiations in anticipation of consummating an acquisition transaction. However, there is no assurance that such negotiations will be successful and the diversion of management attention on such unsuccessful transactions may adversely affect management's ability to pursue other business opportunities.

In addition, KLC PropCo intends to acquire diversified real estate interests, including investments in non-education related properties. The performance of this acquisition strategy in general, or of any particular property, cannot be predicted.

The initial closing of this offering will require a minimum investment (including the amount attributable to KUE LLC through conversion of its preferred limited partner units, including accrued dividends at the option of KUE LLC, into Common LP Units) of U.S. $280.0 million. There can be no assurance of additional closings after the initial closing of the offering, whether before the completion of the Offering Period on March 31, 2007 or thereafter. Unless there are subsequent closings or offerings, cash available for acquisitions and expansion would be limited to available cash of KLC and KUE and proceeds of future financings of KLC and KUE.

6.1.2 The Company plans to acquire or invest in non-U.S. companies. This international expansion strategy is untested, and may include acquisitions or developments in countries where for-profit education is not well established

Foreign acquisitions involve certain risks not typically associated with U.S. acquisitions, including risks relating to (i) currency exchange matters, including fluctuations in the rate of exchange between the U.S. dollar and the various foreign currencies in which the Company's non-U.S. interests are denominated, and costs associated with conversion from one currency into another; (ii) differences between the U.S. and foreign securities markets, including potential price volatility in and relative illiquidity of some foreign securities markets, the absence of uniform accounting and financial reporting standards and disclosure requirements and less governmental supervision and regulation; (iii) certain economic and political risks, including potential restrictions on foreign acquisition and repatriation of capital, and the risks of political, economic or social instability and the possibility of expropriation or confiscatory taxation; (iv) the possible imposition of foreign taxes on income and gains; and (v) differences in applicable legal systems, including the possibility that the Company may experience difficulty in asserting legal claims or obtaining legal remedies against sellers of businesses in foreign jurisdictions.

The Company's prior operating history is limited to its U.S.-based businesses. Historical results may not be indicative of future performance outside the U.S. The Company's non-U.S. businesses may operate in countries in which the legal and regulatory frameworks, customary business models, education practices and philosophies and political and social norms are substantially different from those in the U.S. International expansion may also involve significant market risks, and opportunities to realize synergies may be limited. There can be no assurance that the Company will be successful in its international expansion strategy.

In addition, the Company may acquire businesses or pursue business development opportunities in countries where for-profit education is not well-established, which may involve greater risks than those associated with similar U.S. acquisitions and developments. For example, the performance of a for-profit education company located in a country where for-profit education is in an embryonic stage may be volatile. Such a company also may be unable to achieve the growth or success achieved by education businesses in countries, such as the U.S., where for-profit education is more established. In addition, there can be no assurance that for-profit education will ever become well-established or maintain viability in any given country. If any of the above events occur, the Company may suffer a partial or total loss of capital invested in that business or development.

6.1.3 The Company's success depends on its ability to attract and retain skilled employees

The success of the Company will depend in part on continued employment of senior management and other key personnel, particularly the Principals. See the discussion under the heading "The Company may not engage in certain businesses" below. If one or more senior management or key personnel become unable or unwilling to continue in their present positions, the business and operations of the Company would be disrupted.

The success of the Company also depends on attracting and retaining highly trained financial, marketing and other personnel. The Company will need to continue to hire additional personnel as its business grows. The market for hiring such personnel is competitive and hiring such personnel may require increased salaries and enhanced benefits under certain circumstances. A shortage in the number of skilled personnel could limit the ability of the Company to increase sales of existing products and services and launch new product offerings.

6.1.4 The Company has significant leverage, and expects to incur additional debt, which could result in adverse effects on its financial condition

The Company has significant leverage and expects to incur additional debt in connection with the acquisition and operation of its businesses. Although the Company intends to use leverage in a manner it believes to be prudent, the leveraged capital structure the Company plans to utilize may significantly increase the Company's exposure to adverse economic factors such as rising interest rates, downturns in the economy or deteriorations in the condition of the businesses or their respective industries. If a business cannot generate adequate cash flow to meet debt obligations, the Company may suffer a partial or total loss of capital invested in such business.

The Company's ability to service its substantial indebtedness, and meet its other obligations depends on its future performance, which will be affected by financial, business, economic and other factors, many of which are outside the Company's control. The Company cannot be certain that its cash flow will be sufficient for such purposes. If the Company does not have enough liquidity, it may be required to refinance all or part of its existing debt, sell assets or borrow more money. The Company cannot guarantee that it will be able to do so on favorable terms, if at all. In addition, the terms of existing or future debt agreements, may restrict the Company from pursuing any of these alternatives.

The substantial level of indebtedness incurred by the Company may have the following consequences of potential concern to investors in the Company:

- The Company must use a substantial portion of its cash flow from operations to pay interest and principal on its indebtedness, which reduces the funds available for other business purposes such as capital expenditures;

- The Company's ability to obtain additional financing for working capital, capital expenditures, acquisitions or general corporate purposes may be impaired;

- The Company may be limited in its ability to borrow additional funds;

- The Company may have a higher level of indebtedness than some of its competitors, which may put it at a competitive disadvantage and reduce its flexibility in planning for, or responding to, changing conditions in its industry, including increased competition; and

- The Company may be more vulnerable to economic downturns and adverse developments than it would without the leverage.

Adverse developments in the Company's financial condition would have adverse effects upon the business and results of the Company as a whole.

6.1.5 The Company faces intense competition in the early childhood care and education services industry from numerous other types of providers

The early childhood care and education services industry is competitive and highly fragmented. The most important competitive factors generally are quality, convenience and, to a lesser extent, price. The Company's, specifically KLC OpCo's, competition in this industry consists principally of:

- other for-profit, center-based child care providers, including franchise organizations;

- preschool, kindergarten and before and after school programs provided by public schools;

- local nursery schools and child care centers, including church-affiliated and other non-profit centers;
- providers of child care services that operate out of homes; and
- substitutes for group child care, such as relatives, nannies and stay-at-home parents.

In many markets, the Company faces competition from preschool services and before and after school programs offered by public schools that provide such services at little or no cost to parents. The number of school districts offering these services is growing, and we expect increased competition from such services in the future. In addition, local nursery schools, child care centers and in-home providers generally charge less for their services than the Company. Many denominational and other non-profit child care centers have lower operating expenses than the Company and may receive donations and/or other funding to subsidize operating expenses. Consequently, operators of such centers often charge lower tuition rates than us. Moreover, fees for home-based care are normally substantially lower than fees for center-based care.

6.1.6 The Company may acquire companies that are not well-established or are experiencing financial difficulties

The Company may acquire less established companies. Acquisitions of interests in such companies may involve greater risks than are generally associated with acquisitions of more established or stable companies. For example, such companies may have shorter operating histories on which to predict future performance and may have negative cash flow. Their performance may be more volatile and they may be unable to sustain the growth rates or success achieved by established companies. In the case of start-up enterprises, such companies may not have significant or any operating revenues. Such companies also may have a lower capitalization and fewer resources (including cash) and may be more vulnerable to failure, resulting in the loss of the Company's entire investment in such company. In addition, less mature companies could be more susceptible to irregular accounting or other fraudulent practices. In such event, the Company may suffer a partial or total loss of capital invested in that company.

The Company has invested in troubled companies in the past, and may make future investments in companies that are experiencing, or are expected to experience, financial difficulties. If such difficulties are not overcome, the Company may lose part or all of any equity investment in such companies.

6.1.7 KUE will rely on the management teams of its subsidiaries

While KUE will retain overall control and set the strategic direction of the Company, day-to-day operations at the subsidiary level will be the responsibility of the management teams at the subsidiary level. There can be no assurance that the existing management teams, or any successor, of any acquired business will be able to operate such business in accordance with KUE's plans and/or objectives.

6.1.8 The Company has a non-controlling interest in *k*12 with limited rights as a shareholder and may acquire minority interests in other entities

The Company holds a non-controlling interest in *k*12 and may in the future acquire minority interests in other companies. Holding a minority interest limits the Company's ability to protect its interests in and to influence management of *k*12. Any future investments in minority interests of other companies will likely involve similar limitations.

In addition, the Company may co-acquire interests in businesses or develop businesses with third parties through joint ventures or other entities, which may have larger or controlling ownership interests in such companies. In such cases, the Company will rely significantly on the existing management and boards of directors of such companies, which may include representatives of other investors with whom the Company is not affiliated and whose interests may at times conflict with the interests of the Company.

Such interests may involve risks in connection with such third-party involvement, including the possibility that a third-party may be in a position to take (or block) action in a manner contrary to the Company's objectives or may have financial difficulties resulting in a negative impact on such interest. Acquisitions made with third parties in joint ventures or other entities also may involve carried interests and/or other fees payable to such third party partners or co-venturers. There can be no assurance that desirable minority shareholder rights will be available or that such rights will provide sufficient protection of the Company's interests.

6.1.9 Certain of the Company's businesses may require additional capital

Certain of the Company's businesses, especially those in development phases, may require additional financing to satisfy their working capital requirements. The amount of the additional financing needed will depend upon the maturity and objectives of the particular business. The Company may seek to raise any required capital from different sources, and subsidiaries in foreign countries may raise capital locally. The availability of capital is generally a function of capital market conditions that are beyond the control of the Company. There can be no assurance that the Company will be able to predict accurately the future capital requirements necessary for success or that additional funds will be available from any source as needed. An inability to timely raise capital may materially and adversely affect the Company and/or its business.

6.1.10 KUE's subsidiaries operate in regulated industries; failure to comply with governmental regulation and licensing requirements could have a material adverse effect on operations

The pre-K-12 education business is highly regulated and is often subsidized with government funding or reimbursement programs. In addition, KUE and its subsidiaries may require the consent or approval of applicable regulatory authorities in order to acquire or operate particular businesses, including in foreign jurisdictions where the Company has limited or no experience with the regulatory framework. Failure to comply with applicable laws or regulations, or failure or inability to obtain applicable approvals, could have a material adverse effect on the operations of KUE and/or its subsidiaries.

For example, KLC's centers and school programs are subject to numerous state and local regulations and licensing requirements. KLC has policies and procedures in place to assist in complying with such regulations and requirements. Although these regulations vary from jurisdiction to jurisdiction, government agencies generally review, among other things, the fitness and adequacy of buildings and equipment, the ratio of staff personnel to enrolled children, staff training, record keeping, children's dietary program, the daily curriculum, and compliance with health and safety standards and transportation safety. In most jurisdictions, these agencies conduct scheduled and unscheduled inspections of the centers and licenses must be renewed periodically. Most jurisdictions establish requirements for background checks or other clearance procedures for new employees of child care centers and school programs. Repeated failures by any of KLC's centers to comply with applicable regulations may result in sanctions against that center or program and other centers or programs in the same jurisdiction, including probation or, in more serious cases, suspension or revocation of a center's or program's license to operate. In addition, this type of action could attract negative publicity extending beyond that jurisdiction.

A licensing authority may determine that a particular center or program is in violation of applicable regulations and may take action against that center or program and possibly other centers or programs in the same jurisdiction. For more information, see "The Operating Company (KLC OpCo) – Licensing and Government Regulation."

6.1.11 Future legislation or new regulations may place additional burdens on the Company and have a material adverse effect on operations

Additional, different and/or more stringent regulations and licensing requirements may become applicable in the future due to changes in laws and regulations, judicial or administrative interpretations of existing laws and regulations, changes in the Company's business strategy or for other reasons. State authorities routinely review the adequacy of regulatory and licensing requirements and may implement changes that significantly increase operating costs. For example, a change in the required ratio of child center staff personnel to enrolled children in a certain jurisdiction could increase KLC center or program staff operating expenses in that jurisdiction and therefore have a material adverse effect on KLC's operations.

There can be no assurance that the Company will be able to (i) obtain all required regulatory approvals that it does not yet have or that it may require in the future; (ii) obtain any necessary modifications to existing regulatory approvals; or (iii) maintain required regulatory approvals. Delay in obtaining or failure to obtain and maintain in full force and effect any regulatory approvals, or amendments thereto, or delay or failure to satisfy any regulatory conditions or other applicable requirements, could prevent operation of the facility or sales to third parties, or could result in additional costs to the Company.

6.1.12 Conflicts of interest may arise with the Principals and their affiliates

The Principals will agree (on behalf of themselves and their affiliates) that KUE will be their exclusive vehicle for equity investment opportunities in and acquisitions of for-profit companies engaged primarily in the business of pre-K through 12th grade education of children (other than companies in which the Principals or their affiliates directly or indirectly owns fifteen percent (15%) or more of the voting stock (or similar voting interests) as of the date of the first closing of the offering, which are LeapFrog Enterprises, Inc. and Nobel Learning Communities, Inc.). The Principals will not acquire or make an equity investment in such companies unless such acquisition or investment opportunity has been first presented to the Independent Committee and subsequently declined by the Independent Committee or initially pursued but later abandoned by KUE. See "The Structure of KUE and the General Partner – Investment in Subsidiaries and Joint Ventures." In addition, existing companies in which KULG and/or its principals are investors along with other unrelated investors may invest in or acquire companies involved in areas relating to education.

Following the consummation of the offering, the Principals will control the General Partner other than with respect to certain actions requiring Investor approval as further described in "The Structure of KUE and the General Partner." Conflicts could emerge between the Principals and the Company in the future, including conflicts due to the other business segments in which the Principals may have interests, separate from the Company. In addition, affiliates of the Principals will have certain financial interests in KUE and certain of its subsidiaries as described in "Related Party Transactions" following the consummation of the offering independent of their ownership of the Units, which may present conflicts of interest.

Certain other potential conflicts of interest include:

- Other activities of management – the Principals and other senior management personnel of the Company are subject to a variety of prior and continuing obligations unrelated to the Company. Accordingly, conflicts may arise in the allocation of management time and resources.

- Lack of separate counsel for Investors – no separate counsel has been engaged by the Company to act on behalf of Investors in the Company.

- For a description of existing arrangements between the Company and its affiliates, see "Related Party Transactions."

- For a description of certain restrictions on one of the Principals and the Company, see "The Company may not engage in certain businesses" below.

By acquiring an interest in the Company, each Investor will be deemed to have acknowledged the existence of any such actual or potential conflicts of interest and to have waived any claim with respect to any liability arising from the existence of any such conflict of interest.

6.1.13 The Company may not engage in certain businesses

On February 24, 1998, without admitting or denying liability, Michael R. Milken consented to the entry of a final judgment in the U.S. District Court for the Southern District of New York in Securities and Exchange Commission v. Michael R. Milken et al., which judgment was entered on February 26, 1998 restraining and enjoining Michael Milken from associating with any broker, dealer, investment advisor, investment company or municipal securities dealer, and from violating Section 15(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). On March 11, 1991, in the action entitled In the Matter of Michael R. Milken, the SEC instituted a proceeding pursuant to Section 15(b)(6) of the Exchange Act and ordered that Michael Milken be barred from association with any broker, dealer, investment advisor, investment company or municipal securities dealer. On April 24, 1990, concurrently with a plea agreement covering criminal violations of federal securities laws, Michael Milken also consented, without admitting or denying liability, to the entry of a final judgment in the U.S. District Court for the Southern District of New York in the civil action entitled Securities and Exchange Commission v. Drexel Burnham Lambert Incorporated, et al., restraining and enjoining Michael Milken from engaging in transactions, acts, practices and courses of business which constitute or would constitute violations of, or which aid and abet or would aid and abet violations of, Sections 7(c), 7(f), 9(a)(2), 10(b), 13(d), 14(e), 15(c)(3) and 17(a)(1) of the Exchange Act, and Regulations T and X and Rules 10b-5, 10b-6, 13d-1, 13d-2, 14e-3, 15c3-1, 17a-3 and 17a-4 promulgated thereunder, and Section 17(a) of the Securities Act.

The Company cannot be in the business of or associated with a broker, dealer, investment company, investment advisor, or municipal securities dealer (collectively, "prohibited businesses"). As a result, the Company cannot pursue any acquisitions or investments that may have the effect of the Company being in any prohibited business. This could adversely affect the Company's ability to make and/or hold investments or acquisitions which may otherwise be consistent with its business objectives.

6.1.14 Litigation and adverse publicity concerning alleged incidents at KLC or other child care centers could hurt KLC's reputation

KLC is subject to claims and litigation arising in the ordinary course of business, including claims and litigation involving allegations of physical or sexual abuse of children. Any such allegations, claims or lawsuits, either individually or in the aggregate, may have a material adverse effect on KLC OpCo's financial position, operating results or cash flows.

Personal trust and parent referrals play a key role in the child care business. KLC believes its success is directly related to its reputation and favorable brand identity. KLC is periodically subject to claims and litigation alleging negligence, inadequate supervision and other grounds for liability arising from injuries or other harm to children. In addition, claimants may seek damages from KLC for child abuse, sexual abuse or other criminal acts arising out of alleged incidents at KLC's centers. There are lengthy statute of limitations periods applicable to child abuse and personal injury claims. Such claims may typically be brought until a number of years after a claimant reaches the age of majority. Any adverse publicity concerning such incidents at one of KLC's child care centers, or child care centers generally, could greatly damage KLC's reputation and could have an adverse effect on occupancy levels at KLC's centers.

6.1.15 KLC's insurance policies may be inadequate to cover claims, and KLC may be unable to maintain existing coverage in the future at reasonable prices

Some operators of child care centers have experienced difficulty obtaining general liability insurance or other liability insurance that covers child abuse. KLC maintains insurance policies to protect against relevant liability exposures in amounts KLC considers to be appropriate. In addition, KLC's owned centers are covered by blanket insurance policies, including property insurance. Although KLC has not historically had to pay any claims exceeding its coverage, claims in excess of, or not included within, its coverage may be asserted. To the extent that any claims are not covered by insurance, KLC will be forced to cover the associated costs itself, which will reduce the amount of cash KLC has available for other business purposes.

Insurance premiums have increased significantly in the past and may increase in the future because of market conditions in the insurance business generally, conditions in the child care industry more particularly or KLC's situation specifically. KLC cannot be certain of the cost or coverage it will obtain with replacements of existing policies, which will depend on the factors described above.

6.1.16 Factors beyond the Company's control, such as economic conditions, may adversely affect the demand for child care services

Demand for child care services is subject to fluctuations in general economic conditions, and the Company's revenues depend, in part, on the number of working mothers and working single parents who require child care services. Recessionary pressure on the economy, and a consequent reduction in the general labor force, may adversely impact the Company because out-of-work parents tend to stop using child care services. In addition, certain demographic trends which are favorable to the Company's business, including the increasing percentage of mothers in the workforce and the growth in population of children of the age needing child care, as well as trends in the preference of working parents and employers for center based child care, may not continue. Other factors beyond the Company's control could adversely affect demand, such as terrorism, natural disasters and epidemics.

Children attending KLC's facilities are generally enrolled on a weekly basis. Accordingly, any change in economic conditions or other external factors affecting demand will impact us more quickly than businesses with longer contractual periods.

6.1.17 A loss or reduction of government funding for child care assistance programs or food reimbursement programs could adversely affect KLC

Federal and state child care assistance programs accounted for approximately 20% of KLC's revenues during the one year period ended December 31, 2005. These funds are primarily from the Child Care and Development Block Grant and At Risk Programs, which are designed to assist low-income families with child care expenses and are administered through various state agencies. Although additional funding for child care may be available for low income families as part of welfare reform and the reauthorization of the Child Care and Development Block Grant and At Risk Programs, KLC may not benefit from any such additional funding.

KLC is eligible to participate in the Child and Adult Care Food Program, or CACFP, which provides reimbursement for meals and snacks that meet certain USDA approved nutritional guidelines. Centers can qualify to participate in the CACFP by meeting one of two tests: 25% or more of the enrolled students receive child care assistance funding or 25% or more of the center's customers have household incomes that are at or below state specified income levels. Reimbursement is calculated based on the percentage of the center's customers that fall into a "free" or "reduced" income category established by the state.

Federal or state child care assistance programs may not continue to be funded at current levels, particularly with large budget deficits putting pressure on discretionary spending programs. In addition, many states have recently experienced fiscal problems and have reduced or may in the future reduce spending on social services. A termination or reduction in funding of child care assistance programs could have a material adverse effect on KLC's business.

Adverse changes to the national or local economies may result in an increase in the number of families eligible for child care assistance. In order to compensate for such increases, state or local governments have in the past, and may in the future, increased parent co-payments required under such programs or change the eligibility requirements to reduce the number of families eligible to participate in such programs. An increase in the required parent co-payments may discourage parents from sending their children to KLC's centers. An increase in required parent co-payments also increases KLC's exposure to the risk of non-payment by these parents.

In addition, states which reduce funding for child care may be unable to qualify to receive funds under the Temporary Assistance for Needy Families, or TANF, program. Such states may utilize funds under the

Child Care and Development Block Grant to provide child care assistance to needy families in lieu of TANF funds, thereby reducing the amount of funds available to other families, including families that utilize KLC's child care centers.

6.1.18 A termination or reduction of tax credits for child care could have a material adverse effect on KLC's business

KLC may enjoy heightened demand for its services because of tax incentives for child care programs. Section 21 of the Internal Revenue Code of 1986, as amended (referred to herein as the "Code"), provides a federal income tax credit ranging from 20% to 35% of specified child care expenses with maximum eligible expenses of $3,000 for one child and $6,000 for two or more children. The fees paid to KLC by eligible taxpayers for child care services qualify for these tax credits, subject to the limitations of Section 21 of the Code. However, these tax incentives are subject to change.

Code Section 45F provides incentives to employers to offset costs related to employer provided child care facilities. Costs related to (a) acquiring or constructing property used as a qualified child care center, (b) operating an existing child care center, or (c) contracting with an independent child care operator to care for the children of the taxpayer's employees will qualify for the credit. The credit amount is 25% of the qualified costs. An additional credit of 10% of qualified expenses for child care resource and referral services has also been enacted. The maximum credit available for any taxpayer is $150,000 per tax year.

Many states offer tax credits in addition to the federal credits discussed above. Credit programs vary by state and may apply to both the individual taxpayer and the employer. A termination or reduction of such tax credits could have a material adverse effect on KLC's business.

6.1.19 Material weaknesses in KLC's internal controls were discovered during KLC's 2005 audit

For a discussion of certain material weaknesses in KLC's internal controls discovered in KLC's 2005 audit, see "KLC: Management's Discussion and Analysis of Financial Condition and Results of Operations for the Fiscal Years Ended 2005, 2004 and 2003" in Appendix B. To address these issues, and as part of the Company's growth plan, KLC is increasing expenditures on IT systems and accounting and IT personnel.

6.1.20 If KLC is unable to attract and retain sufficient numbers of qualified employees, if minimum wage rates increase or if KLC's employees unionize, KLC's results of operations may be adversely affected

KLC believes that its success is largely dependent on its ability to attract and retain qualified employees. Many of KLC's child care center staff are entry level wage earning employees, and turnover in this industry has traditionally been significant. If KLC is unable to hire or retain sufficient numbers of qualified employees (particularly center directors and supervising employees) or are only able to hire or retain such employees by providing significantly greater salaries, wages and benefits than KLC currently does as a result of increases in the federal or state minimum wage rates or other market conditions, KLC's operations may be adversely affected.

Since early 1998, union organization efforts in the child care industry have received considerable publicity. While union officials associated with the American Federation of State, County and Municipal Employees and Service Employees International have repeatedly announced their intention to engage in a nation-wide effort to organize child care workers, organization efforts have been focused on government-funded providers. To date, efforts to organize employees of for-profit providers have been minimal. However, organizational efforts may occur and, if successful, could have an adverse effect on KLC's relationships with employees and KLC's labor costs. In addition, the general publicity surrounding such efforts, even if not focused on KLC's centers, could result in increased wages for child care workers and, as a result, increase KLC's labor costs.

6.1.21 Because KLC (through KLC PropCo) owns or leases a substantial number of real properties, and expects to invest in additional properties, results of operations could be adversely affected if environmental contamination is discovered on any of the properties

KLC is subject to U.S. federal, state and local environmental laws, regulations and ordinances that may impose liability for damages resulting from past spills, disposals and other releases of hazardous substances as well as clean up costs. In particular, under applicable environmental laws, KLC may be responsible for investigating and remediating environmental conditions and may be subject to associated liability, including lawsuits brought by private litigants, relating to KLC's properties. These obligations could arise whether KLC owns or leases the property at issue and regardless of whether the environmental conditions were created by KLC or by a prior owner or tenant. Environmental conditions unknown to KLC at this time relating to prior, existing or future properties may be discovered and may have a material adverse effect on KLC's results of operations.

6.1.22 KUE has a limited history

While certain subsidiaries of KUE have a financial and an operating history, KUE has only recently been organized and has relatively little financial or operating history upon which prospective investors may evaluate its performance, and has not prepared separate or consolidated financial statements. The prior performance of the subsidiaries of KUE described herein may not be indicative of the future results of the Company.

6.2. Tax Risks

6.2.1 Certain tax considerations generally applicable to Investors subject to U.S. tax liability

KUE is expected to be treated as a partnership for U.S. federal income tax purposes. Each Investor that is subject to U.S. federal income tax liability will take into account its allocable share of items of income, gain, loss, deduction, and credit of KUE (as determined under the Limited Partnership Agreement), without regard to whether it has received distributions from KUE. As a result, the tax liability to an Investor resulting from such allocation may exceed the cash distributions made by KUE to the Investor. Further, upon the sale of its Common LP Units, an Investor may, depending on the amount of Company debt, if any, and the Investor's adjusted tax basis, incur a tax liability in excess of the amount of cash received.

The U.S. Internal Revenue Service (the "IRS"), or other taxing authority may challenge the manner in which income, gains, losses and deductions are allocated to holders of Common LP Units, the General Partner and holders of the Profits Participation LP Units under the Limited Partnership Agreement. For U.S. federal income tax purposes, allocation of any item of income, gain, loss or deduction to a partner in a partnership will be given effect so long as the allocation has "substantial economic effect," or is otherwise in accordance with the partner's interest in the partnership. If an allocation of an item pursuant to the Limited Partnership Agreement does not satisfy this standard or is deemed not to satisfy this standard by the IRS, it will be reallocated by the IRS among the Partners on the basis of their respective interests in KUE (as determined by the IRS), taking into account all facts and circumstances. In such a case, Investors could have additional tax liabilities or suffer adverse tax consequences.

An investment in KUE will give rise to a variety of complex U.S. federal income tax and other tax issues for Investors. Certain of those issues may relate to special rules applicable to certain types of Investors subject to U.S. tax, such as tax-exempt entities, foundations, life insurance companies, banks, dealers, in securities, U.S. persons who own 10% or more of KUE and non-U.S. persons and entities. Prospective Investors are urged to consult their tax advisors with specific reference to their situations concerning an investment in KUE.

6.2.2 Tax-Exempt and Non-U.S. Investors may become subject to U.S. Tax

KUE business activities could generate income that will be taxable to certain otherwise tax-exempt Investors as "unrelated business taxable income." Although, under the Limited Partnership Agreement, the General Partner is required to use its reasonable best efforts not to engage in, or invest in (other than through an entity that is not a pass-through entity) a pass-through entity that engages in, any activity which constitutes the conduct of a trade or business in the United States and generates income which constitutes "effectively connected income" in the hands of the non-U.S. Investors that own Common LP Units, it is possible that some of KUE's business activities and acquisitions could generate income that is "effectively connected" with a U.S. trade or business which could create U.S. federal income tax reporting, tax liability, and tax withholding for non-U.S. Investors. Additionally, KUE believes that neither KUE nor its subsidiaries is currently a U.S. Real Property Holding Corporation ("USRPHC") for U.S. federal income tax purposes. However, no assurances can be given in this regard. Furthermore, it is possible that in the future KUE and/or its subsidiaries may become a USRPHC if, for example, the value of the U.S. real estate holdings of KUE or such subsidiary increases sufficiently. A disposition of an interest in a USRPHC could create gain for non-U.S. Investors which would be treated as if the non-U.S. Investor were engaged in a trade or business within the U.S. and as if such gain were effectively connected with such trade or business. This would create U.S. federal income tax reporting, tax liability and withholding for non-U.S. Investors. Investors that are non-U.S. persons are urged to consult their tax advisors regarding the potential application of the USRPHC rules to their investment in KUE.

6.2.3 Investors may become subject to taxation in non-U.S. jurisdictions

KUE expects to make investments in jurisdictions outside of the U.S., and KUE, its subsidiaries and/or the Investors may be subject to income or other tax in those jurisdictions. In addition, local tax incurred in non-U.S. jurisdictions by KUE or subsidiaries through which it invests may not entitle Investors to either (i) a credit against tax that may be owed in the U.S. or their respective local tax jurisdictions, or (ii) a deduction against income taxable in the U.S. or such local jurisdictions by the Investors.

6.2.4 Controlled Foreign Corporations

KUE anticipates that it and/or its subsidiaries will invest in non-U.S. operations. Depending upon the percentage of ownership of such operations by KUE and its subsidiaries and the type of legal entity chosen for such operations, these non-U.S. operations could be classified as a Controlled Foreign Corporation ("CFC") for U.S. federal income tax purposes. If an entity is classified as a CFC, certain types of income could be taxable to U.S. persons owning 10% or more of KUE for U.S. income tax purposes, even if no distributions of cash are made from such entity, and gain from the disposition of such entity would be taxed as if it were a dividend to the extent of such entity's earnings and profits, rather than as a capital gain, for U.S. income tax purposes.

6.2.5 Treatment of KUE as a U.S. Entity

Under the Code, certain non-U.S corporations may be treated as U.S. corporations for U.S. federal income tax purposes, thereby subjecting such non-U.S. corporations to U.S. federal income tax on their income. Recently enacted U.S. tax legislation includes one such provision. Under this legislation, referred to as the anti-inversion legislation, non-U.S. corporations that acquire interests in a U.S. corporation or partnership and meet certain ownership, operational and other tests may be treated as U.S. corporations for federal income tax purposes. The legislation grants broad regulatory authority to the U.S. Secretary of Treasury to provide such regulations as may be appropriate to determine whether a non-U.S. corporation is treated as a U.S. corporation or as are necessary to carry out the intent of the provision, including adjusting its application as necessary to prevent the avoidance of its purpose. Recently issued Treasury regulations provide that the anti-inversion legislation is applicable to a foreign partnership that is or becomes a "publicly traded partnership" within two years of the acquisition by it of a U.S. corporation. A "publicly traded partnership" is any partnership (i) interests in which are traded on an established securities market, or (ii) interests in which are readily tradable on a secondary market (or the substantial equivalent thereof). KUE believes that it is not currently a publicly traded partnership and does not intend to become a publicly traded partnership within two years of this offering or the acquisition of KLC and *k*12. As a result, KUE does not believe the anti-inversion legislation or any regulations promulgated within the scope of the legislation's regulatory authority should apply to KUE although no assurance can be given in this regard or with respect to any new acquisitions of or investments in U.S. corporations. In addition, KUE does not believe that any other Code provision subjecting non-U.S. corporations to U.S. federal income tax should apply to KUE or its subsidiaries, although no assurance can be in this regards. The promulgation of contrary regulations or a successful challenge of either of these positions by the Internal Revenue Service could materially reduce a holder's after-tax return and, thus, could result in a substantial reduction of the value of the Units.

6.2.6 Currency Fluctuations

An investment in KUE is a U.S. dollar denominated investment. Contributions to and distributions from KUE will be made in U.S. dollars. Fluctuations in value between the U.S. dollar and the Investor's functional currency (if other than the U.S. dollar) may result in taxable income to the Investor.

6.2.7 Reporting Requirements

Investors who are U.S. Persons will be required to file an IRS Form 8865 with the Investor's U.S. federal income tax return for the taxable year in which the Investor purchases the Common LP Units. Investors who are U.S. Persons may, depending upon the size of their investment in the General Partner, be required to file an IRS Form 5471 with the Investor's U.S. federal income tax return for the taxable year in which the Investor purchases Class A ordinary shares in the General Partner. Additionally, depending on the type of non-U.S. investments KUE makes, Investors who are U.S. Persons may be required to file additional IRS Forms such as a Form 5471 in subsequent years.

6.3. Risks Related to Projections

6.3.1 The projections included in this Memorandum and otherwise provided to potential Investors are subject to a number of assumptions and uncertainties; potential Investors are cautioned not to place undue reliance on such projections

The projections included in this Memorandum and other models and forecasts that may be presented to or discussed with Investors represent management's best estimates as of the date of this Memorandum of KLC's, KLC OpCo's and KLC PropCo's projected results of operations for the years ended December 31, 2006 to 2011 (the "Projections"). The Projections were not prepared with a view toward compliance with published guidelines of the SEC, the American Institute of Certified Public Accountants, or any regulatory or professional agency or body or generally accepted accounting principles of the U.S. or any other country. In addition, neither the Agents, Deloitte & Touche LLP, the Company's independent auditors, nor any other independent expert, accountant or counsel has examined, reviewed or compiled the Projections and, consequently, assume no responsibility for them. The Projections should be read together with, and are qualified in their entirety by, the information contained in the rest of this "Risk Factors" section, "Management's Discussion and Analysis of KLC's Pro Forma Results of Operations," "Business" and the financial statements and the related notes thereto included in this Memorandum.

The Projections do not include any expenses of any entity within the Company above the KLC level, including KUE expenses ($17.5 million of the $20.0 million payable pursuant to the Fixed Overhead Payment Agreement) that will be payable by KUE for administrative and other services. See "Related Party Transactions." The Projections also do not include any projected expenses relating to grants of Profits Participation Units or other equity-related grants, including for the Stock Appreciation Rights Plan at Knowledge Schools, Inc. ("KSI"), pursuant to which payments may be made based on different valuations of KSI stock and are based on the same multiples of Adjusted EBITDA used in 2005; actual valuations are conducted annually and may be higher or lower. Finally, the Projections do not reflect projected interest expenses on KUE debt.

The Projections do not assume that the Company will make any future material acquisitions, even though the Company expects to use the proceeds of the sale of the Units, among other purposes, for acquisitions, which will likely affect actual performance and cause it to differ from the Projections. The Projections assume the success of the Company's operating strategy, although no assurance can be given that the Company's strategy will be effective or that the anticipated benefits from the strategy will be realized in the periods for which the Projections have been prepared. The assumptions described herein are those that the Company believes are most significant to the Projections; however, not all assumptions used in preparing the Projections have been set forth herein.

The Projections, in general, assume that: (i) the Company will not be negatively or positively impacted by any material legal proceedings; (ii) there will be no material change in any of the Company's existing contracts or leases; (iii) there will be no change in generally accepted accounting principles in the U.S. that will have a material effect on the financial results of the Company; (iv) there will be no labor disputes, natural disasters, acts of terrorism, epidemics (such as avian flu) or other disturbances that would materially affect the operations or revenues of the Company; and (v) that worldwide economic conditions and economic conditions in the U.S. remain generally favorable and consistent with those prevailing on the date of this Memorandum.

The Projections are based upon a number of assumptions and estimates that, while considered reasonable by management, are inherently subject to significant business, economic and competitive risks, uncertainties and contingencies which are beyond the control of KLC, and upon assumptions with respect to future business decisions which are subject to change. Accordingly, the Projections are only an estimate, and actual results will vary from the Projections, and these variations may be material. Consequently, the inclusion of the Projections herein should not be regarded as a representation of the Company, its advisors, the Agents, or any other person of results that will actually be achieved. Projections are necessarily speculative in nature, and it is usually the case that one or more of the assumptions in projections do not materialize. Prospective purchasers of the Units are cautioned not to place undue reliance on the Projections.

The limited *k*12 projections contained in this Memorandum were received from *k*12 management and were not prepared by the Company or its management.

The Company does not intend to update or otherwise revise the Projections to reflect circumstances existing after the date hereof or to reflect the occurrence of unanticipated events, even in the event that any or all of the underlying assumptions do not come to fruition. Furthermore, the Company does not intend to update or revise the Projections to reflect changes in general economic or industry conditions.

6.4. Risks Related to Investing in the Units

6.4.1 There will be significant unallocated net proceeds from the offering

If there are additional closings after the initial closing of the offering, after repayment of KUE's debt, a significant amount of the anticipated net proceeds from the offering of the Units may not have been designated for specific uses. Therefore, the Company's management will have broad discretion within the business scope of the Company with respect to the use of the net proceeds of the offering. There can be no assurance that the uses of proceeds will benefit the Company or Investors.

6.4.2 Investors will only have limited rights to receive ongoing information about the Company

Other than as expressly provided in the Limited Partnership Agreement of KUE (the "Limited Partnership Agreement"), the Company does not expect to provide ongoing detailed information regarding its business, financial condition or results of operations to Investors. The Limited Partnership Agreement provides that Investors shall receive yearly audited financial statements of the Company, as well as semi-annual reports on the Company's operations. In addition, Investors have the right to access certain other information regarding the Company as provided for in the Limited Partnership Agreement. As long as the Units are not registered under the Exchange Act, the Company will not be subject to the reporting requirements thereunder. KLC's 2005 audit was not completed until May 2006 due to systems conversion issues.

6.4.3 Investors may never receive cash distributions on their investment; there is no assurance of investment return

There is no assurance that KUE will be able to generate returns for the Investors or that returns will be commensurate with the risks of investing in KUE. There may be limited or no cash flow available to KUE from its subsidiaries or to the Investors from KUE and there can be no assurance that KUE will make any distributions to Investors. KUE is not obligated to declare cash distributions with respect to the Units other than certain distributions to meet tax obligations of the Investors. Public offerings, sales or other dispositions which may result in a return of capital or the realization of gains, if any, are not expected to occur for a number of years. An investment in KUE should only be considered by persons who can reasonably afford a loss of their entire investment.

6.4.4 KUE's ability to make distributions is limited by its subsidiaries' existing and future indebtedness

KUE will not have any material assets other than its ownership of various subsidiaries (including KLC) and investments in other companies, and will not have any material operations or revenues other than income derived from KUE's interest in its subsidiaries and any proceeds arising from its investments in other companies. Therefore, KUE's ability to make any distributions to Investors will be completely dependent on the operations and business results of its subsidiaries and its investment holdings.

KLC's ability to make distributions or payments to KUE is restricted by the provisions of its various debt agreements, including without limitation, the Indenture, dated as of February 2, 2005, by and between KLC, the Guarantors, as defined therein, and Wells Fargo Bank, N.A., as trustee. Therefore, KLC may be prevented from making distributions or payments to KUE as and when needed by KUE. Such restrictions may adversely affect the business and operations of KUE as a whole and the value of any investment in KUE. Similar restrictions may apply to future indebtedness incurred by KLC and other subsidiaries of KUE.

6.4.5 There is no public market for, and Investors may be unable to sell, the Units

There is no public trading market for the Units and one is not expected to develop. The economic risks of this investment must be borne for an indefinite period of time. Neither the Units nor the underlying Common LP Units or Class A Shares will be registered under the Securities Act or under any state securities laws (or the securities laws of any other jurisdiction). Each Investor will be required to represent that it is purchasing the Units for its own account for investment purposes and not with a view to resale or distribution. Although the General Partner intends to approve permitted transfers specified in the LPA, and not to unreasonably withhold consent to transfers, all transfers require the prior approval of the General Partner under Caymans Law, and no transfer of the Units may be made unless the transfer complies with the terms of the Limited Partnership Agreement. Although the Limited Partnership Agreement of KUE and the organizational documents of the General Partner permit the foregoing transfers and the General Partner has agreed with certain Investors to approve such transfers, applicable Cayman Islands law gives the General Partner full discretion to approve or disapprove transfers.

Each transfer must be registered under the Securities Act and applicable state securities laws or an exemption must be available. These restrictions will be noted on a legend placed on each certificate, if any, representing the Units. As a precondition to the effectiveness of any transfer, the Company may require the transferor to provide an opinion of legal counsel stating that the transfer is in accordance with the Securities Act and to pay any costs the Company incurs in connection with the transfer. It is not currently contemplated that the Units will be registered under the Securities Act, the Exchange Act, or other securities laws. In addition, certain provisions of Rule 144 under the Securities Act, which permit the resale, subject to various terms and conditions, of restricted securities after they have been held for one year, do not apply to the Units because the Company is not required to file and does not file, current reports under the Exchange Act and does not, and does not intend to, make comparable information publicly available.

6.4.6 Purchasers of the Units are subject to Dilution

Although we have not prepared a consolidated balance sheet for KUE, prior to this offering and the conversion of $180 million of KUE's preferred limited partner units currently held by the Principals and their affiliates into Common LP Units at the per Common LP Unit issuance price, we expect that KUE would have negative or nominally positive common equity book value due to its historical capital structure, including its level of indebtedness. As a result, the book value per Unit acquired in this offering will be substantially less after this offering than the purchase price paid by the Investors. The Investors' interests are also subject to future dilution if and to the extent the Company grants options, profits interest units or similar rights to officers, directors or employees of the Company, and will also be affected by any awards by the Company under the Long Term Incentive Plan and the Stock Appreciation Rights Plan described under "Management Incentive Plans and Employment Agreements." Investors will have a Co-invest Right to purchase a pro-rata portion of certain issuances of Units by the Company for cash; however, such right is subject to customary exceptions. See "The Structure of KUE and the General Partner."

6.4.7 KUE and the General Partner are not U.S. entities; disputes must be resolved by binding arbitration in the United Kingdom

KUE will be a Cayman Islands exempted limited partnership. The General Partner is a Cayman Islands exempted company. The internal governance of KUE will be pursuant to the Limited Partnership Agreement in compliance with applicable laws of the Cayman Islands. The internal governance of the General Partner will be pursuant to the Memorandum and Articles of Association and the agreement among members in compliance with applicable laws of the Cayman Islands. All disputes under the applicable agreements or related to this offering must be resolved through binding arbitration conducted in the United Kingdom under the London Court of International Arbitration Rules. Such laws and Rules may offer less or different protections to Investors than laws applicable to comparable U.S. entities or laws of the Investors' home countries.

6.4.8 The Company will not be operated to optimize the investment, tax or other objectives of any individual Investor

The Investors may have conflicting investment, tax and other interests with respect to their investments in the Company. The conflicting interests of individual Investors may relate to or arise from, among other things, the nature of investments made by the Company and the structuring or the acquisition of investments. As a consequence, conflicts of interest may arise in connection with decisions made by the General Partner, including with respect to the nature or structuring of investments, that may be more beneficial for one Investor than for another Investor, especially with respect to Investors' individual tax situations. In selecting and structuring investments appropriate for the Company, the General Partner will consider the investment and tax objectives of the Company as a whole, not the investment, tax or other objectives of any individual Investor. Investors must seek their own investment, tax and other advice concerning an investment in the Units.

6.4.9 The Investors may not separately transfer the constituent securities underlying the Units

The Investors may not separately transfer Common LP Units or Class A Shares (unless otherwise approved by the Board of Directors of the General Partner and the Independent Committee), and there may be less Investor interest in a security such as the Units than there would be in more traditional corporate or partnership investments. This restriction may adversely affect an Investors' ability to transfer the Units in the future.

6.4.10 Under certain circumstances, the General Partner may cause an Investor's interest in KUE to be redeemed or transferred

Under circumstances where the continuing participation in KUE by an Investor would have a material adverse effect on the Company, the General Partner may cause an Investor's interest in KUE to be redeemed or transferred. See "Limitation of a Limited Partner's Participation" in Section 4.11 of the Limited Partnership Agreement of KUE.

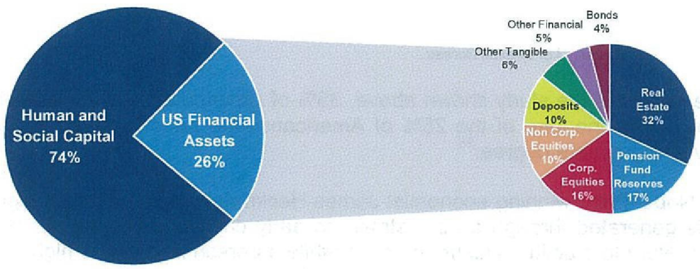
7. DISTRIBUTION POLICY

We intend to retain any future earnings to fund working capital, debt service, acquisitions and growth and do not expect to make distributions for the foreseeable future. Any determination to make distributions in the future will be at the discretion of the General Partner and will depend upon our results of operations, financial condition and other factors, as the General Partner, in its discretion, deems relevant. Limitations in the credit facility and indenture of KLC restrict distributions by KLC that could, in turn, be made available for future distributions by KUE to its partners.

8. INDUSTRY OVERVIEW

8.1. Human Capital

Historically, the world economy has been viewed as being driven by an asset base of natural resources. This has shifted to an economy driven by industrial and financial resources. This perception is reinforced through the statistics and measurements used by governments, as seen in the Federal Reserve's representation of the U.S. balance sheet. However, it is KUE's view that the real assets of a city, state, region or country are its people (human capital) and their productive capacity. KUE believes that national economies that fail to embrace this concept will be left behind. Nobel Prize winning economist Gary Becker estimates that in today's service based economy, human capital accounts for 76% of the assets in the U.S.



2005 Human Capital - $238 Trillion Market

2005 U.S. Balance Sheet - $62 Trillion Market

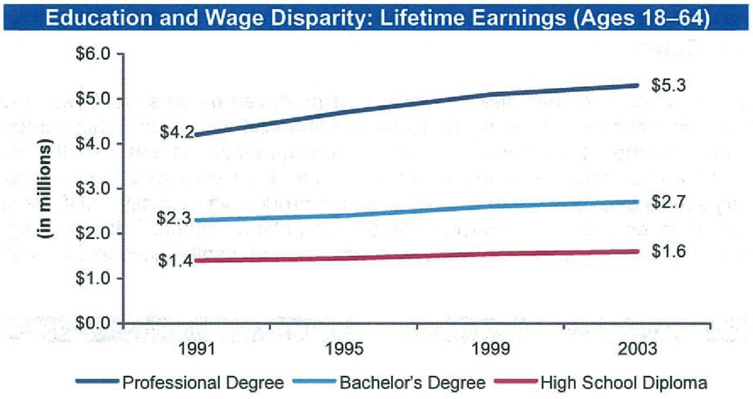
Source: Gary Becker
Source: U.S. Federal Reserve

Importantly in today's economy, the value of a company is increasingly driven by creativity, innovation and education. Companies are recognizing that human capital is their defining asset. With the value of education becoming apparent to government and businesses alike, the Principals believe that a significant opportunity exists to create an education company that will promote and cultivate human capital. Today, not a single education company ranks in the top 100 worldwide as measured by market capitalization. Within 20 years, KUE believes that the education space will contain some of the largest companies in the world.

8.1.1 Enhancing Human Capital through Education

Education is a primary factor in improving an individual's life-long productivity. Studies have shown that a higher level of education leads to increased lifetime earnings, and that this is increasingly true in the new, knowledge economy.

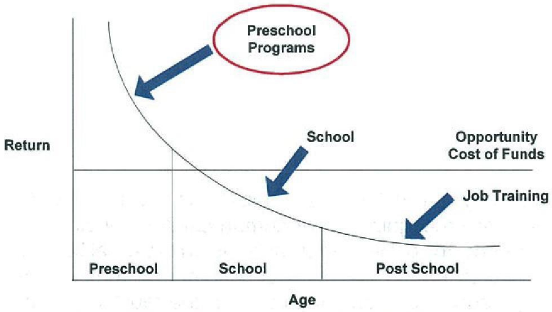
As shown below, an individual with a professional degree earns approximately 100% more than a college graduate and an individual with a bachelor's degree earns approximately 70% more than a high school graduate in their lifetime.



Source: U.S. Census Bureau.

Despite the results of the study shown above, 35% of Americans over the age of 18 have not graduated high school. Only one-third of the 25% of Americans who have received a bachelor's degree, or 8%, have received a graduate degree.[16]

Studies by Nobel Prize winning economist James Heckman suggest that the highest rate of return within education is generated through an investment in early childhood programs. Heckman's study asserts, "The rate of return to a dollar investment made while a person is young is higher than the rate of return to the same dollar made at a later age," as illustrated below:



Source: August 2002 study, James Heckman, University of Chicago.

Due to the high rate of return of investments in ECE and the principles underlying the theory of human capital, KUE has made its largest initial investment in KLC, the largest company serving the ECE market in the world.

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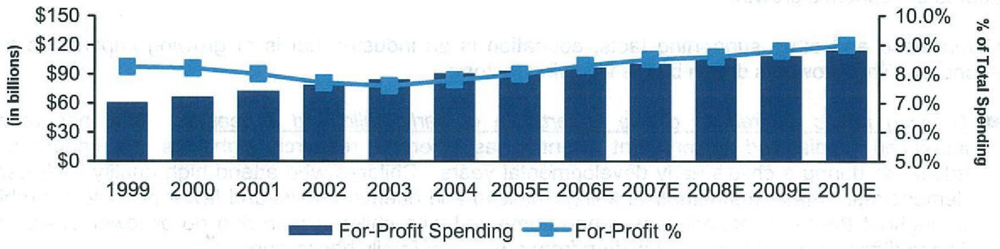
[16] *Source: U.S. Census Bureau.*

8.2. The Education Market

Education is one of the largest sectors in the world, representing approximately 5% of global gross national income of $48 trillion.[17] In 2005 in the U.S. alone, education was a $1.0 trillion market with for-profit education accounting for $81 billion or 7.8% of this amount.[18] The for-profit component of this industry (pre-K-12, post secondary and corporate training) is projected to grow faster than the overall historical industry growth rate, at a 7.4% annual rate, reflecting the increasing importance of for-profit operations in the sector, to reach a market size of $116 billion by 2010.[19] Education is still predominantly provided by public / governmental entities in most countries including the U.S. KUE believes that the industry will converge towards a more balanced public / private system, similar to the evolution observed in the 20th century in other major industries such as healthcare, infrastructure and telecommunications.

US Education Industry: Revenues Generated by For-Profit Companies (1999–2010E)



Source: Harris Nesbitt estimates, U.S. Department of Education National Center for Education Statistics, Training Magazine and Eduventures.

8.3. The U.S. Early Childcare or "pre-K" Market

The highly fragmented early childcare or "pre-K" market includes care based in homes and housed by community organizations (*e.g.*, churches, synagogues, YMCAs) and center based facilities. Center-based childcare includes preschools (nurseries), workplace centers (located on-site at the company), lease-model centers (located in a real estate developer's office building), back-up centers (a variety of on-site and off-site back-up care programs) and family day-care facilities (located in someone's home or center). Although childcare may evoke thoughts of a babysitting service, education has become an increasingly important element in services to pre-K children. However, the education-focused portion of the childcare market remains relatively small.

Since the early 1980s, center-based ECE has become the care provider of choice for families. The U.S. ECE unit generated an estimated $54 billion in total spending in 2005, representing a 10% compound annual growth rate since 1982.[19] Approximately five million or 60% of 3 to 5-year-olds with working mothers are enrolled in ECE centers.[20] The following growth drivers are expected to continue to fuel growth in the early childcare market: growing importance of ECE, demographics (*e.g.*, more children aged five and younger), increase in families with two working parents, more educated parents, corporations recognizing the benefits of childcare services and tax incentives and other positive legislation.

The perception of ECE as a fundamental component of child development has contributed to average annual fee increases of roughly 7% amongst center-based facilities, reflecting the stable, relatively inelastic nature of the demand for higher quality care.[21] The number of children receiving childcare outside the home grew from 10.6 million in 1999 to an estimated 12 million in 2003, an increase of 3.1% annually.[22]

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[17] *Source: UNESCO Institute for Statistics Database.*
[18] *Source: US Department of Education National Center for Education Statistics and Training Magazine and Harris Nesbitt research.*
[19] *Source: Harris Nesbitt, Education and Training, September 2005.*
[20] *Source: "Early Care and Education: Work Support for Families and Developmental Opportunity for Young Children," Urban Institute, September 2001.*
[21] *Source: The National Economic Impacts of the Child Care Sector, 2002.*

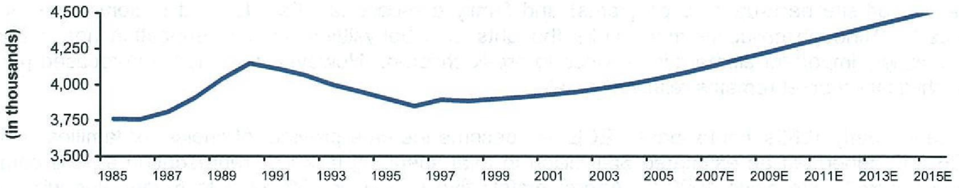
8.3.1 Early Childhood Education's Role in the Economy

ECE enables people to pursue income-generating activities by allowing parents to participate in the workforce and contribute to the economy. A recent study found that every dollar spent on the formal ECE sector generates approximately 15 dollars worth of additional earnings by parents.[23] Furthermore, evidence suggests that regardless of family income, children who have participated in ECE programs do better in school than their peers who did not. ECE also reduces social and economic costs by lowering school dropout rates, and leads to decreased levels of criminal activity. These social and demographic forces have established ECE as a fundamental component of today's economic 'infrastructure' and a source of economic growth.

Given these and other supporting facts, education is an industry that is of growing importance to the economy. This growth is driven by the following factors:

- _Growing public awareness of the importance of early childhood education_. ECE has received increased media and government attention as scientific research highlights the importance of education during a child's early developmental years. Children who attend high quality ECE centers demonstrate greater mathematical ability, thinking and attention skills, and fewer behavioral problems throughout their educational lives, when compared with children receiving no or lower quality care. These differences hold true for children from a range of family backgrounds.[24]
- _Favorable demographic trends_. According to the National Center for Health Statistics, the annual number of live births in the U.S. was approximately 4.1 million in 2003, compared to approximately 3.6 million in 1980, and the U.S. Census Bureau projects the annual number of live births to increase to approximately 4.5 million in 2015.[25] The number of children aged five years or under grew from approximately 22.5 million in 1990 to approximately 23.4 million in 2002, according to the U.S. Census Bureau, and is projected to reach 26.8 million in 2015.[22]

Number of Live Births in the U.S.



Source: U.S. Census Bureau.

- _Changing workforce composition_. A rising percentage of women participate in the workforce due to an increasingly higher cost of living, a desire for financial independence and an elevated standard of living preference, which necessitates two full-time wage earners for most families. Of the nearly 65 million jobs created nationally between 1964 and 1997, 40 million were occupied by women. Today, more than 62% of mothers with children under the age of six work full-time compared to 19% in 1960.

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[22] *Source: Harris Nesbitt, Education and Training, September 2005.*
[23] *Source: The National Economic Impacts of the Child Care Sector, 2002.*
[24] *Source: The Children of the Cost, Quality, and Outcomes Study Go To School, 1999.*
[25] *Source: Population Projections Branch, U.S. Census Bureau, "U.S. Interim Projections by Age, Sex, Race and Hispanic Origin," May 2004.*

- *Highly educated parents spend more on childcare*. The increasing number of college graduates in the U.S. and abroad will support continued expenditures on ECE. In 2001, 70% of children with college-educated mothers attended childcare programs, while only 38% of children whose mothers had less than a high school degree attended childcare programs. A recent report by the U.S. Department of Commerce reveals that families with college degrees spent an average of $92.67 per week (per child) on childcare in 2000, whereas parents without a high school degree only spent an average of $59.70 per week per child.[26]

- *Increasing demand for Employer-Sponsored Centers*. With increased levels of employment, corporations are witnessing growing demand for ECE services. Companies benefit from offering childcare services to their employees as (i) it often reduces employee absenteeism; (ii) serves as a perquisite, which differentiates the employer's compensation package; and (iii) tends to lower turnover rates. ECE services contribute to a stable and consistent workforce.

- *Favorable tax incentives*. Certain tax incentives are available to parents utilizing childcare programs. Specifically, Section 21 of the Internal Revenue Code provides a federal income tax credit (Child and Dependent Care Credit) ranging from 20% to 35% (increased in 2003) of certain childcare expenses for "qualifying individuals." The Economic Growth and Tax Relief Reconciliation Act of 2001 created a Federal Employer Tax Credit for certain childcare expenses beginning in 2002. Employers can receive a credit of 25% of their spending on the construction or rehabilitation of a child care facility or on contracts with a third party child care facility to provide child care services to employees. Corporations also benefit from tax incentives of up to $150,000 per year.

8.3.2 Industry Characteristics

The ECE sector has a number of favorable operating characteristics. First, well-run school operators enjoy high returns on capital, predictable revenue streams and strong free cash flows, with students generally paying in advance of services delivered. Second, industry data shows that tuition rates have increased by approximately 7%, a rate which has exceeded inflation.[27] The current outlook suggests no change in this dynamic. Third, government regulation and licensing standards represent notable barriers to entry.

Given that education is a universally accepted product, management believes that our business model is highly scalable. The basic center model is expected to be essentially repeatable and transferable to new markets and locations. With labor representing approximately 50% of the total operating cost structure, companies within this sector tend to benefit from a variable cost structure, which allows them to reduce costs as economic and market conditions change.

Often the demanding requirements for the selection of school directors and teachers can limit the pool of qualified employees for the industry. Low pay also tends to result in high turnover rates of approximately 50% annually within the industry.

8.3.3 Competitive Landscape: Early Childhood Education

The ECE sector is highly fragmented with the top six providers representing approximately 5% of all organized ECE centers. The Company's primary competitors are (i) local nursery schools and child care centers, some of which are non-profit (including religious-affiliated centers), (ii) providers of services that operate out of their homes and (iii) other for-profit companies which may operate a number of centers. Local nursery schools and ECE centers generally charge less for their services. Many religious-affiliated and other non-profit child care centers have no or lower rental costs than for-profit chains, may receive donations or other funding to cover operating expenses and may utilize volunteers for staffing. Consequently, tuition rates at these centers are commonly lower than the Company's rates.

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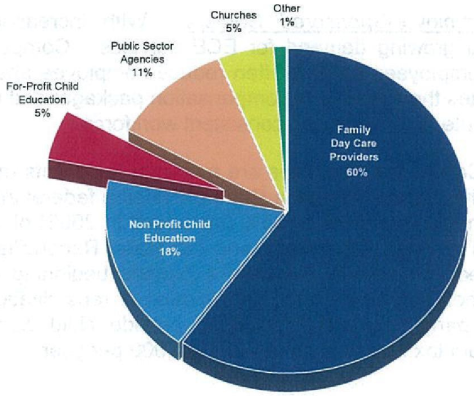
[26] *Source: Harris Nesbitt Research, Education and Training, September 2005.*
[27] *Source: The National Economic Impacts of the Child Care Sector, 2002.*

There are also several national chains, such as Bright Horizons Family Solutions, La Petite Academy, Learning Care Group (ABC Learning) and Nobel Learning Communities, or regional for-profit companies with sizeable numbers of centers and similar economies of scale in curriculum development, marketing and site development.

Competitive Landscape within Early Childhood Education



Source: Harris Nesbitt Research, Education and Training, September 2005 and The National Childcare Association.

KLC OpCo successfully competes against these companies, with the following differentiating factors: (i) strong brand equity; (ii) a strong management team; (iii) grass roots level marketing; and (iv) a larger network of community centers. KLC also has a number of employer-sponsored centers that gives the Company greater breadth and depth. Finally, KLC is the only large competitor in the sector owned by an education company. Following is a brief description of each of several of the national competitors.

- *ABC Learning (Public, traded on the ASX)*

The Learning Care Group, ABC Learning's U.S. operating segment, has over 30,000 children enrolled (full and part-time) nationwide. Under the Childtime and Tutor Time segments, Learning Care operates child care centers and under the Franchise segment it licenses and provides developmental and administrative support to franchises operating under the Tutor Time brand. As of October 14, 2005, Childtime generated LTM sales of $220.7 million across 460 childcare centers in the U.S. (328 of which are company owned and 132 of which are franchised locations). On January 11, ABC announced it had successfully completed the acquisition of the Learning Care Group, Inc. for $159 million in cash. In addition to the 460 centers located in the U.S., ABC operates 707 centers in Australia and New Zealand.

- *Bright Horizons (Public)*

Founded in 1986, Bright Horizons Family Solutions is a leading provider of employer-sponsored child care services. Bright Horizons operates 616 childcare and early education centers for over 600 clients. The company serves more than 66,300 children in 39 states, the District of Columbia, Canada, Guam, Ireland and the United Kingdom. In September of 2005, the company acquired ChildrensFirst Inc. As of December 31, 2005, the company reported LTM sales and EBITDA of $625 million and $75 million, respectively.

- *La Petite Academy (Private)*

La Petite is the third largest operator of for-profit pre-school centers in the U.S., currently serving more than 65,000 children in 649 centers located in 36 states and the District of Columbia. The company also owns 68 (included in the 649 centers) Montessori schools which cater to K-12 students. LPA's residential Academies are typically located in residential, middle-income neighborhoods. As of February 28, 2006, the company reported LTM sales and EBITDA of $411 million and $33 million, respectively. The company has been owned by JP Morgan Capital since 1998.

- *Nobel Learning Communities (Public)*

Nobel is a for-profit provider of private pay education and services for education entities for the preschool through 12th grade market. The company's programs are offered through a network of general education preschools, elementary and middle schools, programs for learning challenged students and special purpose high schools. Nobel operates 150 schools in 13 states across the U.S. As of December 31, 2005, the company reported LTM sales and EBITDA of $166 million and $15 million, respectively. Affiliates of the Principals are currently significant shareholders of the company.

8.3.4 Government's Role in Early Childhood Education

Approximately 83% of the estimated $54 billion spent on ECE is generated by private and independent non-profit services. The government provides the remaining 17% of services through Head Start and public schools. The government pays for public school and Head Start programs, but also subsidizes payments of low-income families to providers of their choice through the Child Care Development Block Grant and Temporary Assistance for Needy Families, which are blended with state dollars. About 25% of for-profit early childhood care revenue comes from these subsidy programs.
The government is, at both the federal and state level, actively involved in expanding the availability of early childhood care services. Federal support is delivered at the state level through government-operated educational and financial assistance programs. Early childhood care services offered directly by states include training, licensing and regulation for early childhood care providers and resource and referral systems for parents seeking ECE.

The increasing importance of education is further demonstrated by the "No Child Left Behind Act of 2001," signed into law in January 2002. This Act is the most sweeping reform of the Elementary and Secondary Education Act, or ESEA, since ESEA was enacted in 1965. To support this commitment, President Bush requested a $54.4 billion budget for the Department of Education for fiscal 2007, a 28.9% increase from the 2001 budget of $42.2 billion.

Certain tax incentives exist for early childhood care programs. Section 21 of the Internal Revenue Code provides federal income tax credits ranging from 20% to 35% of certain early childhood care expenses for qualified individuals.

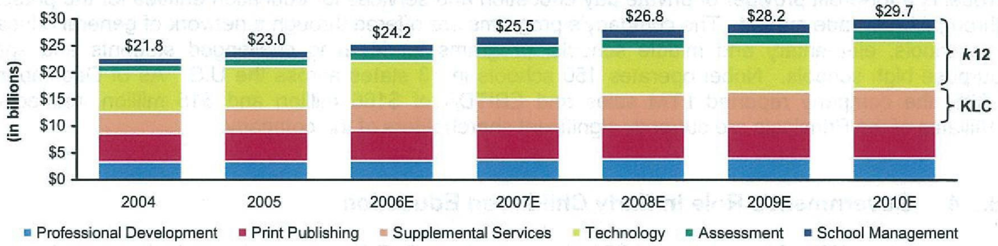
8.4. The U.S. K-12 Education Market

A fundamental change has occurred in the K-12 sector in recent years, as the desire to improve school quality has overtaken demographics as a key growth driver. Companies providing supplemental educational services (*e.g.*, KLC) and several school alternatives, such as charter and contract schools (*e.g.*, *k*12), are expected to be instrumental in improving K-12 student performance.

The K-12 education market in the U.S. is comprised of over 15,000 school districts including more than 90,000 K-12 public schools, approximately 3.5 million teachers, and about 54 million students according to the National Center for Education Statistics. Total K-12 expenditures, federal, state and local, are approximately $500 billion.

Despite the growth in spending on public education over the last decade, student achievement has shown little progress. According to the 2005 National Assessment of Educational Progress, 32% of eighth-graders performed below the Basic level in mathematics, and only 29% performed at or above the Proficient level. One-third of American fourth graders are functionally illiterate. KUE believes the following factors will present significant market opportunities in the coming years for for-profit K-12 education providers. According to Harris Nesbitt Research, industry experts estimate that the $21.8 billion in revenues generated by for-profit education providers in 2004 will increase to over $29.7 billion in 2010, 5.3% annual growth.[28] However, these estimates reflect only spending by institutions on educational material and do not reflect the growing segment of direct to consumer educational materials, which represented roughly an additional $20 billion in 2004.[28]

For-Profit K-12 Education (2004 – 2010E)



Source: Harris Nesbitt estimates based on Eduventures' "The Education Industry: Learning Markets and Opportunities 2004" report (December 2004).

Standards and Accountability. Due to the unsatisfactory performance of American students in grades K-12, parents and lawmakers are demanding increased standards and accountability in schools. This demand has focused on establishing guidelines for every school and every subgroup of students and then holding the school (and its staff) accountable to students' performance relative to those standards. The Company expects continued focus on academic standards, assessments, and accountability in the near future. Despite this increased attention on standards and accountability, many parents continue to remain concerned with the overall effectiveness of the public school system and are increasingly relying on for-profit education providers.

Charter Schools and Virtual Academies. There has also been a significant rise in the number of charter schools in the U.S. in the past decade. Since Minnesota first enacted legislation in 1991, 40 states and the District of Columbia have passed charter school legislation. Under the typical charter school statute, an identified entity, such as the state, a state university or local school district board of education, is authorized to grant a specified number of charters to community groups or non-profit entities to create a public charter school. A growing number of charter boards, in turn, contract with private sector organizations to manage the schools. In return for a large measure of autonomy from normal public school regulation, the charter school is accountable for student academic performance. Currently, the Company estimates that there were nearly 2,700 charter schools in operation nationwide, as of January 2003, with an estimated enrollment of over 685,000 students. Moreover, the federal No Child Left Behind Act ("NCLB") recognizes charter schools as a viable alternative for students who want to transfer from neighborhood schools that are failing.

To capitalize upon the increasing number of parents who are willing to educate their children at home and still want to be part of the public system, there are a growing number of virtual schools, where much of the learning is home-based. Most current charter school legislation either explicitly authorizes virtual public schools or does not directly prohibit them. Because virtual schools usually offer a comprehensive curriculum, easy-to-use learning and performance evaluation technology assistance and instructional materials, the Company believes that a growing number of families will pursue virtual public schools as an attractive alternative to traditional schools and a more cost-effective, better organized approach to home schooling. The large and scalable platform that exists at *k*12 is designed to capitalize on this trend as the number of charter schools has grown on average nearly 13% annually, while charter school enrollment has increased 20% annually, outpacing the less than 1% average K-12 enrollment growth over the same period.[29]

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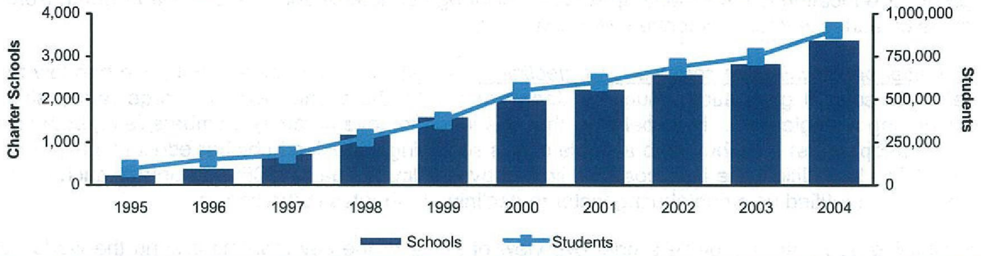
[28] *Source: Harris Nesbitt, Education and Training, September 2005.*

K-12 Charter Schools and Enrollment (1995 to 2004)



Note: Number of students in 1999–2000 school year was estimated.
Source: Harris Nesbitt, Education and Training, September 2005 and Charter School Leadership Council and Center for Education Reform.

Supplementary Education Market. For parents who continue to enroll their children in traditional public and private schools, there is a growing demand for supplemental education services. According to the U.S. Department of Education, 31% of elementary school children, or more than 10 million students nationwide, are enrolled in after-school programs. According to Eduventures, the U.S. supplementary education market was estimated to be approximately $8.1 billion in 2003. Additionally, under the No Child Left Behind (NCLB) Act, some children in poorly performing schools will be eligible for taxpayer-financed supplemental educational services. These supplemental educational services can be provided by state-approved non-profit or for-profit entities as well as private schools and public schools (including public charter schools). More parents want to spend educational time with their children, but lack access to high quality supplemental material that is effective and integrated into a comprehensive plan that is easy for a parent to deliver and manage.

The virtual school market is a relatively new area within the broader K-12 education market. As a result, there is a growing need for a high quality, trusted, national education offering for this demographic. Furthermore, parents are seeking much more robust and comprehensive ongoing assessments than is currently offered in the public schools, in order to assess their children's progress both on a relative and an absolute basis.

8.5. The International Education Industry

The leading authority on the worldwide education industry, the United Nations Educational Scientific and Cultural Organization ("UNESCO"), estimates that average public expenditures on education across the world increased from 4.1% of GNP in 1990 to 4.5% in 2000. In developing countries the increased government focus on education is more pronounced as public education expenditures rose to 4.1% in 2000 from 3.5% in 1990. Based on global gross national income of $48 trillion, KUE estimates that the global education market opportunity is greater than $2.4 trillion driven by the following factors:

- *Large population of school-aged children in parts of the world*. The opportunity for pre-K-12 education is particularly strong in certain countries with high fertility rates. Examples of such opportunities include India, where mothers give birth to an average of 2.78 children. Increases in the population of children coupled with an increased awareness of the economic and social benefits of education are expected to lead to significant growth in the global ECE market.

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[29] *Source: Harris Nesbitt, Education and Training, September 2005 and Charter School Leadership Council and Center for Education Reform.*

- *Increased government focus on education.* In many countries, per student public spending on education represents a larger portion of per capita GDP than in the U.S. For example, in Australia and the United Kingdom, the government has subsidized a large portion of ECE. Now, countries such as Saudi Arabia are developing similar programs. The opportunity for increased government spending on pre-K-12 education is particularly apparent in growing economies such as China and South Korea as those countries increase their share of world GDP.

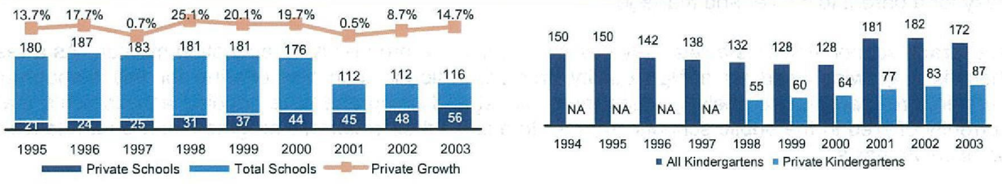
- *Potential opportunities in countries with declining populations.* In countries that have had low fertility rates for several generations, such as Japan and Italy, there often exists a large family structure supporting a single child. KUE believes that this leads to several family members (*e.g.*, both parents and grandparents) contributing to a single child's schooling, resulting in higher education expenditures per child. In addition, the high cost and limited availability of quality ECE in countries such as Japan has been identified as a contributing factor to declining birth rates in the country.

The following paragraphs provide a brief overview of some of the key markets around the world, which KUE views as attractive. These include China, Saudi Arabia and the United Kingdom.

8.5.1 China: Market Overview

With a population of 274 million children under age 15, and a fertility rate of 1.73, China represents an attractive market for early education providers.[30] In China, mandatory education starts with primary schools, at which most children enroll by age six. Currently, 24 million Chinese children are attending kindergarten as a growing middle class and the one-child policy are driving multiple incomes to one child and increasing the amount of capital that can be dedicated to education. These socioeconomic factors are reflected in the increasing numbers of private kindergartens, which have grown at a rate of 13% over the past eight years.[31]

Public versus Private Pre-School Education



Note: Private kindergarten enrollment data unavailable before 1998.
Source: Ministry of Education, China Education Industry Development Statistics Report, China Education and Research Network.

Schools tend to be concentrated in larger cities with Beijing, Shanghai, Nanjing, Qingdao and Guangzhou being the largest pre-school markets. Kindergartens are divided into three categories: Bilingual, Foreign language and Mandarin. Bilingual kindergartens are typically joint ventures between Chinese and foreign entities or owned wholly by Chinese private or public entities. Tuitions for bilingual programs can reach $15,000 per year. Foreign language kindergartens are wholly owned foreign schools that recruit only foreign students and are typically backed by their embassies. These schools adhere to foreign educational standards with Mandarin being taught as a second language. The tuitions of foreign language schools range from $10,000 to $22,000 per year. Mandarin kindergartens are typically owned by Chinese public entities.

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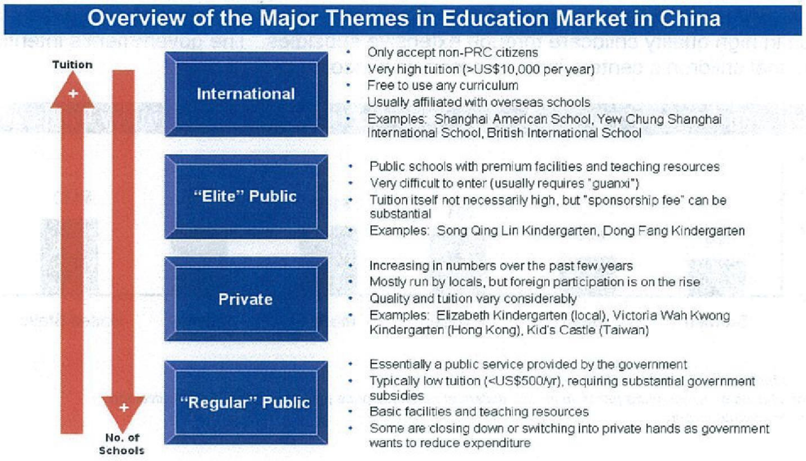
[30] *Source: Central Intelligence Agency, World Factbook 2006.*
[31] *Source: Ministry of Education, China Education Industry Development Statistics Report, China Education and Research Network.*

Kindergartens can be set up by the Ministry of Education, private enterprises, universities, communities and individuals. While local governments establish the minimum and maximum fees allowed to be charged by public kindergartens, private schools are allowed to dictate "reasonable" tuition levels.



Overview of the Major Themes in Education Market in China

International

- Only accept non-PRC citizens
- Very high tuition (>US$10,000 per year)
- Free to use any curriculum
- Usually affiliated with overseas schools
- Examples: Shanghai American School, Yew Chung Shanghai International School, British International School

"Elite" Public

- Public schools with premium facilities and teaching resources
- Very difficult to enter (usually requires "guanxi")
- Tuition itself not necessarily high, but "sponsorship fee" can be substantial
- Examples: Song Qing Lin Kindergarten, Dong Fang Kindergarten

Private

- Increasing in numbers over the past few years
- Mostly run by locals, but foreign participation is on the rise
- Quality and tuition vary considerably
- Examples: Elizabeth Kindergarten (local), Victoria Wah Kwong Kindergarten (Hong Kong), Kid's Castle (Taiwan)

"Regular" Public

- Essentially a public service provided by the government
- Typically low tuition (<US$500/yr), requiring substantial government subsidies
- Basic facilities and teaching resources
- Some are closing down or switching into private hands as government wants to reduce expenditure

Source: Enspiren.

8.5.2 Saudi Arabia: Market Overview

Saudi Arabia's nationwide public educational system comprises eight universities and more than 24,000 schools. Open to every citizen, the system provides students with free education, books and health services. The government allocates over 25% of the annual State budget to education.

According to the Ministry of Education, Saudi Arabia prizes education because of its critical importance in developing the country's human potential. Education is a central aspect of family and community life. Parents are deeply involved in their children's education, and the close links between home and school serve to reinforce the structure of the community and the nation.

The government plans to increase the enrollment of 4 to 6-year-olds to 40% by 2014.[32] Additionally, by royal decree, education is now required for all 4-year-olds. New labor laws also necessitate that companies employing 50 or more women provide daycare centers. Despite this new series of laws, there still only exist 1,200 kindergarten schools in Saudi Arabia (42% private and 58% public) to support the legislative pronouncements. The Company anticipates that, additional capacity will be needed to meet these social objectives. These trends, as noted by the Ministry of Education in Saudi Arabia have led to private education facilities opening all over the Kingdom.

8.5.3 United Kingdom: Market Overview

The United Kingdom stands out with consistent rises in its investment in education, not just in absolute terms, but also relative to national income: Spending on educational institutions increased from 4.3% of GDP in 1990 to 5.5% in 1995 and 5.9% in 2002. From 1995 to 2002, spending and enrollment in primary and secondary education has also increased by 36% and 21%, respectively.[33] Additionally, the country invests almost twice as much as any other country at the pre-primary level. The rate of participation of 4-

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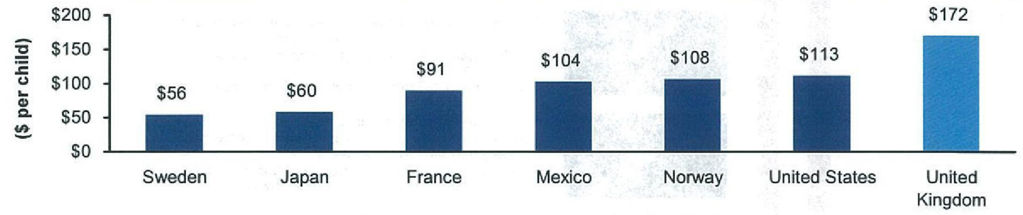
[32] *Source: Kingdom of Saudi Arabia Ministry of Education Deputy Ministry for Planning and Administrative Development General Directorate for Planning. "The Ministry of Education Ten-Year Plan" 2005.*

[33] *Source: OECD, "Education at a Glance 2005."*

year-olds and under as a percentage of the 3-to-4-year-old population has also increased from 51% in 1998 to 77% in 2002.

The U.K. government is focused on the ECE industry and expects to spend $18 billion on child care schemes in the near future through "Sure Start", an initiative designed to encourage additional participation in high quality childcare through extensive subsidies. The government's intention is to create 3,500 additional children's centers in un-serviced, low-income communities.

Comparison of per-child expenditure at Pre-Primary and Primary levels 2001



Source: UNESCO Institute for Statistics database.
Note: Calculations based on expenditure per child in U.S. dollars at purchase price parity, using full time equivalents.
[1] Public and private institutions only.

9. KNOWLEDGE UNIVERSE EDUCATION ("KUE")

KUE is the third largest for-profit education company in the world. KUE currently operates in the U.S. and is the indirect parent company (87.6% ownership[34]) of KLC and also a major shareholder (owns 17.9% to 40.0%[35] of equity) of *k*12. In November 2005, KLC divided its business, with substantially all of its real estate owned by special purpose subsidiaries (KLC PropCo) and all of its customer contracts and operations remaining at KLC and certain other subsidiaries (KLC OpCo).

The controlling shareholders of the General Partner are Michael Milken, Lowell Milken and Steven Green (collectively the "Principals"). Michael Milken and Lowell Milken each has more than two decades of experience in the education sector through involvement in several for-profit and not-for-profit initiatives. Steven Green, a former U.S. ambassador to Singapore, has more than two decades of experience as an international industrialist leading major corporate restructurings and expansions in manufacturing, housing, consumer products, retail and real estate enterprises. The Principals founded KUE and its affiliated companies over the past decade based on their vision of a world where competition for human capital is becoming the driving force of economic prosperity. KUE represents the Principals' sole vehicle for equity investment opportunities in the early education through secondary school sector going forward.

The Company has an accomplished and internationally recognized leadership team. Led by the Principals, the Company has a prominent management team and advisory board with significant financial resources and substantial experience in the fields of education and real estate management. Additionally, through its past experiences at KLC, the Company has demonstrated the ability to acquire and integrate education assets. The Company's management consists of people with diverse backgrounds in operations, corporate finance, real estate, government relations and education. KUE's role will be to oversee the portfolio of operating businesses, identify acquisition candidates, hire top level management of the operating businesses and help the portfolio companies navigate some of the legislative and regulatory matters that exist in K-12 education. These services will be performed for the Company by KULG, for which KUE will pay $20.0 million annually to KULG in quarterly installments beginning July 1, 2006 pursuant to the Fixed Overhead Payment Agreement. See "Related Party Transactions."

The General Partner plans to have a Board of Directors (the "Board") with representatives from some of the countries KUE plans to expand into, public policy experts and independent directors with complementary backgrounds. KUE expects to benefit from the breadth and depth of the knowledge, experience and expertise of the Board. At the final closing of this offering, at least two members of the Board will be Independent Directors. After the Initial Listing of the Units and so long as consistent with contractual and licensing obligations, the General Partner will have a majority independent board.

9.1. KUE Management and Advisory Board Members

The following table sets forth KUE's management and current advisory board members. Detailed biographies can be found in Appendix A.

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[34] *The 12.4% minority position is held by various investors.*

[35] *KUE's ownership varies depending on the liquidation value or sale value of k12 and according to the preference of the various securities KUE owns. At higher valuations, KUE's percentage ownership is lower. See "k12 Inc (k12) – k12 Equity."*

Management	
Name	**Position**
Lowell Milken	Co-Founder, President and Chief Executive Officer of KUE
Michael Milken	Co-Founder and Chairman of KUE
Steven Green	Vice Chairman of KUE, and Chairman and CEO of k1 Ventures and Greenstreet Real Estate Partners
Ted Sanders	Vice Chairman of KUE
Stephen Goldsmith	Senior Vice President of Strategic Planning and Worldwide Government Programs
Nina Rees	Senior Vice President, Strategic Initiatives
Jeffrey Safchik	Chief Financial Officer
Richard Sandler	General Counsel
Adam Cohn	Senior Vice President, Business Development
Geoffrey Moore	Senior Vice President, Corporate Communications
Michael Neumann	Vice President, Business Development

KUE Advisory Board	
Name	**Position**
Les Biller	Retired Vice Chairman & Chief Operating Officer of Wells Fargo and Company
Ted Mitchell	CEO of the New Schools Venture Fund
Tsvi Gal	Chief Technology Officer for Deutsche Bank Asset Management

9.2. Note Payable to KULG by KU Education, Inc.

On January 6, 2005, KU Education, Inc., a Delaware corporation and subsidiary of KUE ("KUE Inc.") executed a promissory note in favor of KULG, an entity controlled by the Principals, in the amount of $200.0 million, the proceeds of which were used in connection with the acquisition of KinderCare by KLC. This note has a seven year maturity and accrues interest at the "reference rate" set by Bank of America plus 1.25% per annum. The note may be prepaid, in whole or in part, without any premium or penalty. As of April 1, 2006, KUE Inc. owes approximately $183.9 million under the note.

9.3. Term Loan Facility

On March 29, 2006, Knowledge Universe Education LLC, a Delaware limited liability company ("KUE LLC"), entered into a six-month $150 million term loan facility with an affiliate of Credit Suisse, one of the Agents. The proceeds of the $150 million term loan were used to repay existing debt of KUE LLC to entities controlled by Michael Milken.

The term loan facility is fully and unconditionally guaranteed by KUE LLC's direct and indirect parents and the parent guaranty is several. Upon contribution of assets to KUE by KUE LLC, KUE will become a co-borrower. It is expected that this Term Loan Facility will be repaid with the proceeds of this offering.

The term loan bears interest at either the reserve adjusted LIBOR rate plus 0.125% or the base rate (generally the applicable prime lending rate, as announced from time to time), at KUE's option and is secured by cash collateral. KUE is permitted to voluntarily prepay the term loan, in whole or in part, without premium or penalty, upon the giving of proper notice.

10. MANAGEMENT'S DISCUSSION AND ANALYSIS OF KLC's PRO FORMA RESULTS OF OPERATIONS

In January 2005, KLC acquired KinderCare and incurred $540 million of term debt (the "Acquisition Term Debt") and $250 million of subordinated bridge debt to finance the acquisition. At the time of the KinderCare acquisition, KinderCare had approximately $300 million of nonrecourse mortgage debt outstanding (the "KinderCare CMBS Debt"). KLC refinanced the bridge debt in February 2005 with $260 million of 7-3/4% senior subordinated notes due 2015 (the "Notes"). In November 2005, KLC completed a transaction (the "Real Estate Transaction") in which KLC divided its business, with substantially all of its real estate owned by special purpose subsidiaries (collectively, KLC PropCo) and all of its customer contracts and operations remaining at KLC and certain other subsidiaries (collectively, KLC OpCo). Management believes that this division represents the best way to analyze the business going forward. In connection with the Real Estate Transaction, KLC PropCo entities incurred $650 million of mortgage debt, $50 million of senior mezzanine debt and $150 million of junior mezzanine debt, which indebtedness is nonrecourse to KLC OpCo, the proceeds of which were primarily used to repay the Acquisition Term Debt and the KinderCare CMBS Debt, and KLC PropCo leased its owned centers back to KLC OpCo. See "KLC: Management's Discussion and Analysis of Financial Condition and Results of Operations for the Fiscal Years Ended 2005, 2004 and 2003" in Appendix B, "KLC: Management's Discussion and Analysis of Financial Condition and Results of Operations for the Quarterly Period Ended April 1, 2006" in Appendix C, "KLC: Management's Discussion and Analysis of Financial Condition and Results of Operations for the Quarterly Period Ended July 1, 2006" in Appendix D and Notes 11 and 21 to KLC's Financial Statements in Appendix E.

The discussion below presents the pro forma results of consolidated KLC (KLC OpCo and KLC PropCo) as if the KinderCare acquisition and the Real Estate Transaction occurred on January 1, 2004. The pro forma results are not adjusted for the costs of operating KLC and KinderCare in parallel for a significant portion of 2005, or for restructuring costs incurred in combining the two businesses. These and other items are reflected as adjustments to EBITDA in our presentation of pro forma Adjusted EBITDA.

Our pro forma results for KLC were not prepared in conformity with Article 11 of Regulation S-X of the SEC (which would not, among other limitations, permit a 2004 pro forma presentation after completion of our 2005 financial statements). In addition, by presenting a pro forma comparison, this discussion and analysis does not include a comparison of KLC's historical GAAP consolidated operating results or segment information that would be required by Item 3-03 of Regulation S-X of the SEC. The presentation of non-GAAP information herein does not purport to comply with Item 10(e) of Regulation S-K or Regulation G of the SEC. For further information see "KLC: Management's Discussion and Analysis of Financial Condition and Results of Operations for the Fiscal Years Ended 2005, 2004 and 2003" in Appendix B, "KLC: Management's Discussion and Analysis of Financial Condition and Results of Operations for the Quarterly Period Ended April 1, 2006" in Appendix C, "KLC: Management's Discussion and Analysis of Financial Condition and Results of Operations for the Quarterly Period Ended July 1, 2006" in Appendix D and the KLC and KinderCare GAAP financial statements in Appendix E.

The pro forma presentation is not shown with adjustments to historical financial statements. Instead, it is based on a "ground up" combination of corporate level expenditures (overhead and capital expenditures) and internal financial statements derived from a center-by-center build up of KLC's results. The primary reasons for the presentation based on internal reports instead of KLC and KinderCare financial statements are the different fiscal year ends and expense classifications between KLC and KinderCare. The "ground up" analysis presented is consistent with management's view of the business.

Key Operating Variables

Net Revenue Trends and Drivers

The vast majority of KLC's net revenues are derived from center operations. The trends and drivers discussed below relate to such center operations.

KLC derives its net revenues primarily from the tuition it charges for attendance by children at its centers. KLC's tuition rates and net revenues can be significantly impacted by the enrollment characteristics at its centers. Key factors include (1) geographic location, because KLC can command higher tuition rates in certain geographic areas; (2) the age mix of children enrolled, because tuition rates depend on the age of the child and are generally higher for younger children; (3) the mix between full- and part-time attendance, because KLC charges comparatively higher rates for part-time enrollment and (4) the level of participation in government subsidy and discount programs.

KLC calculates its average weekly tuition rate as the actual tuition charged at centers that are open at the calculation date, net of discounts, for a specified time period, divided by average "full-time equivalents," or "FTEs" for the related time period. KLC's FTEs are calculated by dividing net revenue by the center's undiscounted average pre-school tuition rate. FTEs do not necessarily reflect the actual number of full- and part-time children enrolled.

Tuition rates at KLC's centers are typically adjusted once per year to coincide with the back-to-school period. KLC typically collects tuition on a weekly basis in advance, the majority of which is paid by individual families. KLC provides discounts to government agencies, employees, families with multiple enrollments, referral sources and organizations KLC partners with for its employer-sponsored centers. In its employer-sponsored centers, tuition may be partly subsidized by such employers.

Approximately 20% of KLC's net revenues are derived from tuition paid at varying levels of subsidy by government agencies. KLC's revenues are therefore affected by changes in the levels of government support for education, which are negatively impacted by weak economic conditions and resulting budget pressure at federal, state and local governments.

KLC reports comparable center revenue trends based on the centers (other than the employer-sponsored centers operated for a management fee) that were open in both periods. Comparable center net revenues do not include revenues generated from centers that have been closed or sold.

Utilization is a measure of the utilization of center capacity. KLC calculates utilization as the total actual child care revenues earned at centers that are open at the calculation date divided by the total potential child care revenue (based upon the center's undiscounted pre-school tuition rate and the center's total licensed capacity) during the related time period.

In addition to tuition charges, KLC records revenues from fees and other income in a majority of its centers. KLC charges a reservation fee, typically at half of the normal tuition charge, for any full week that an enrolled child is absent from its centers. KLC also collects registration fees and fees to cover educational supplies at the time of enrollment and annually thereafter. KLC offers tutorial programs on a supplemental fee basis in the majority of our centers in the areas of literacy and reading, foreign language, mathematics and music. KLC also offers field trips, predominantly during the summer months, for an additional charge. KLC's centers earn other miscellaneous revenue from various sources, including management fees related to certain employer-sponsored centers. In addition to its child care operations, KLC's subsidiary, KC Distance Learning, sells high school level courses via online and correspondence formats and provides related instructional services directly to private students, as well as to cyber and traditional schools and school districts.

Cost of Revenue – Trends and Drivers

KLC's costs of revenue include the direct costs related to the operations of its centers. Labor related costs are the largest component of costs of revenue. KLC's time management and scheduling systems, which enable us to adjust staffing levels for peak and reduced attendance periods, allow KLC to manage its labor productivity without adversely impacting the quality of services within its centers.

Other costs recorded at the center level include rent, marketing, maintenance, utilities, transportation, classroom and office supplies, insurance and food. KLC's management believes its large, combined nationwide center base gives it the ability to leverage the costs of programs and services, such as curriculum development, training programs and other management processes.

During fiscal year 2005, KLC experienced a reduction in projected claims costs for its self-insurance programs. However, management anticipates that premium and claims costs will continue to reflect market forces, which are beyond KLC's control.

The Real Estate Transaction did not affect consolidated rent expense, but resulted in an increase of approximately $96.0 million in annual rent expense of KLC OpCo, which is leasing centers from KLC PropCo which now has title to substantially all of KLC's owned real property.

Other Operating Expenses

KLC's other operating expenses include the costs associated with the field management and corporate oversight and support of its centers and restructuring related expenses. Labor related costs are the largest component of KLC's general and administrative expenses.

Seasonality

New enrollments are generally highest during the traditional fall "back to school" period and after the calendar year-end holidays. KLC attempts to focus its marketing efforts to support these periods of high reenrollments. Enrollment generally decreases somewhat during the summer months and the calendar year-end holidays.

Results Discussion

Revenue increased to $1.48 billion in 2005, which represents an increase of $35.6 million over 2004. Gross margin was $340.7 million during the 52 weeks ended December 31, 2005, an increase of $11.1 million, or 3.4%, compared to the same period last year. Adjusted EBITDA during the 52 weeks ended December 31, 2005, was $238.0 million which was $6.6 million, or 2.9%, above the same period in 2004.

KLC Consolidated	2004PF	2005PF
Revenue	$1,442.2	$1,477.7
Revenue Growth		*2.5%*
Payroll and other	$725.0	$734.9
Rent	113.2	121.1
Other Operating Expenses	274.4	281.0
Gross Profit	$329.6	$340.7
Adjusted EBITDA	$231.4	$238.0
Adjusted EBITDA Margin	*16.0%*	*16.1%*
Adjusted EBITDAR	$344.5	$359.1
Adjusted EBITDAR Margin	*23.9%*	*24.3%*
Other Financial and Operating Data		
Depreciation and Amortization	$97.1	$89.3
Interest Expense	89.9	89.9
Capital Expenditures	70.6	83.1
# of Centers (at year end)	2,021	1,934
Average Weekly Tuition (combined actual)	$156.61	$167.35
Utilization	61.6%	61.2%

Revenue. During the 52 weeks ended December 31, 2005, revenue increased $35.6 million, or 2.5%, over the same period in 2004. The increase was primarily due to tuition rate increases, which took effect in January 2005 and September 2005, offset by the impact of center closures and a slight decline in Utilization. However, during the third quarter of 2005 Utilization levels increased versus the same period in 2004, from 59.3% to 60.3%. This positive Utilization trend was repeated in the fourth quarter of 2005 as levels rose to 59.2% versus 58.9% in the comparable period of 2004. Management believes these improvements reflect stronger economic conditions, strong back-to-school enrollments, marketing efforts and other management initiatives and programs. ECE revenue increased $24.9 million, or 1.8%, in the 52 weeks ended December 31, 2005 compared to the same period of 2004. On a same center basis (centers opened for more than one year), revenue increased 4.4% from 2004 to 2005.

KLC Consolidated Revenue	2004PF	2005PF
ECE Centers	$1,394.4	$1,419.3
School Partnerships	39.8	48.5
KCDL	8.0	10.0
Total	$1,442.2	$1,477.7

Cost of revenue and gross margin. Gross margin for the 52 weeks ended December 31, 2005 was $340.7 million, or 23.1% as a percentage of sales, compared to $329.6 million, or 22.9% in the prior year. Costs of revenue include the following:

- *Salaries, wages and benefits.* Salaries, wages and benefits were $734.9 million, or 49.7% as a percentage of sales, during the 52 weeks ended December 31, 2005, compared to $725.0 million or 50.3%, for the same period in 2004.

- *Rent.* Rent increased by $8.0 million to $121.1 million during the 52 weeks ended December 31, 2005, compared to the same period in 2004. The increase in rent was largely due to a center sale-leaseback program conducted by KinderCare during 2004, prior to its acquisition by KLC. Pro forma rent does not include $96.3 million of intercompany rent payable by KLC OpCo to KLC PropCo as a result of the Real Estate Transaction.

- *Other costs.* Other costs include costs directly associated with the centers such as business insurance, food, marketing, maintenance, utilities, transportation and classroom and office supplies. Other costs were $281.0 million during the 52 weeks ended December 31, 2005, compared to $274.4 million in the same period last year. Other costs were 19.0% of revenue during both years.

General and administrative expenses. General and administrative expenses, which include costs associated with the field and corporate oversight and support of KLC's centers, were $126.0 million during the 52 weeks ended December 31, 2005, compared to $126.4 million for the same period in 2004. General and administrative expenses included the substantial majority of estimated temporary parallel organization costs of $28.1 million and $23.3 million in 2004 and 2005, respectively, as discussed below.

Adjusted EBITDA. Adjusted EBITDA was $238.0 million during the 52 weeks ended December 31, 2005 compared to $231.4 million in 2004. The increase in Adjusted EBITDA was primarily a result of slightly higher revenue and gross margin improvements enhanced by lower general and administrative costs before non-cash SAR accruals, net of restructuring charges and parallel organization costs. The table summarizes KLC's calculation of Adjusted EBITDA as defined in KLC's existing revolving credit agreement. See "Non-GAAP Financial Measures" for a discussion of our use of performance measures and related limitations.

KLC Consolidated		
	2004PF	2005PF
EBITDA	$194.6	$174.7
Adjustments to EBITDA		
Restructuring Charge Addback[1]	5.1	29.4
(Gains) / Losses on Sales[2]	2.1	(1.3)
(Gain) / Loss on Minority Investment	(2.1)	0.0
Dividend Income[3]	(1.8)	(0.5)
SAR Plan[4]	0.0	9.9
IDS Expenses[5]	2.7	(0.0)
Estimated Parallel Organization Costs[6]	28.1	23.3
Management Fee[7]	2.5	2.5
Adjusted EBITDA	$231.4	$238.0

[1] *Represents one-time, non-recurring costs of integrating the AER and KinderCare acquisitions in 2004 and 2005, respectively.*

[2] *Represents the non-cash impact of (gains) / losses on the sales of centers.*

[3] *Income earned as a result of ownership in a minority investment.*

[4] *Non-cash expenses related to KSI's Stock Appreciation Rights Plan attributed to KLC's employees and payable by KSI in cash upon settlement. $7.8 million has been paid pursuant to SARs in connection with the departure of KLC's chief executive officer in 2006.*

[5] *In 2004, KinderCare contemplated an offering of income deposit securities. Costs here reflect the costs incurred as a result of the contemplated offering.*

[6] *Result of the costs of operating duplicative infrastructure at KLC and KinderCare following the KinderCare acquisition.*

[7] *Management fee paid to affiliate entities.*

Restructuring charges. Restructuring charges during the 52 weeks ended December 31, 2005, were $29.4 million. Included in the $29.4 million of non-recurring integration costs were $11.0 million of severance costs that resulted primarily from the closure of KLC's former corporate offices at Golden, CO. Additional restructuring costs in 2005 were the result of consulting, temporary contract-based labor and other charges. Restructuring charges in 2004 were $5.1 million and were related to KLC's acquisition of AER in May 2003.

Parallel Organization Costs. For much of 2005 KLC was burdened with the central operations and infrastructure of both KinderCare and KLC. KLC has defined parallel organization costs as the cost of maintaining these duplicative corporate functions during the overhead rationalization associated with the KinderCare acquisition. KLC believes that approximately 70% of parallel organization costs are related to salaries. Remaining parallel organization costs are related to upkeep, maintenance and utilities at corporate facilities. During the first month of 2006 parallel organization costs had been reduced to $174,042 (annualized run-rate of $2.1 million) compared to an estimated $23.3 million in 2005.

Parallel organization costs for the 2004 fiscal year are estimated based on an annualized run-rate based on the costs incurred during the first month following the KinderCare acquisition. During that month (January 2005), KLC incurred approximately $2.3 million of parallel organization costs ($28.1 million on an annualized run-rate basis).

Interest. Interest expense in 2004 and 2005 is almost identical because both years are pro forma for the financings associated with the Real Estate Transaction, which refinanced the indebtedness incurred to finance the KinderCare acquisition. In 2005 pro forma interest expense of $89.9 million includes $5.1 million of non-cash interest expense. Actual interest expense during the 2005 fiscal year was $80.7 million which did not include $32.2 million related to the early extinguishment of debt.

Capital Expenditures. The following table shows the breakdown in KLC's projected capital expenditures:

KLC Consolidated	2004PF	2005PF
Maintenance	$34.4	$36.6
New Centers	26.4	32.4
IT Spending and Other Capex	9.8	14.0
Total Capital Expenditures	$70.6	$83.1

In 2004 and 2005, KLC spent $34.4 million and $36.6 million, respectively on maintenance capital expenditures, which includes refurbishment of its existing centers and equipment and supplies replacement costs. In addition, KLC spent $9.8 million in 2004 on corporate infrastructure improvements, primarily IT spending compared to $14.0 million in 2005. The remainder of KLC's capital expenditures was used to expand KLC's center base through both purchases of furniture, fixtures and equipment and construction of new owned centers.

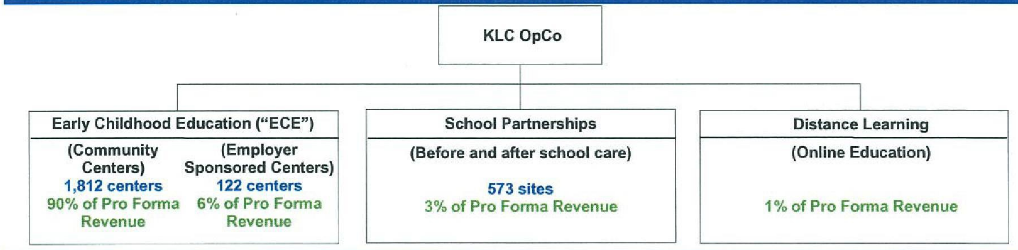
11. THE OPERATING COMPANY ("KLC OPCO")

KLC's mission is to provide a quality education to children from birth to college. KLC was formed from the combination of KLC and AER which occurred in May 2003 and the subsequent acquisition of KinderCare in January of 2005. Based in Portland, Oregon, KLC consists of (i) KLC OpCo, a collection of operating companies and (ii) KLC PropCo, a collection of special purpose subsidiaries owning substantially all of KLC's real estate.

11.1. KLC OpCo

KLC OpCo is the largest for-profit provider of ECE and care services in the U.S., the second largest provider of employer-sponsored ECE to the corporate segment in the U.S. and the largest for-profit provider of before and after school programs in the U.S. Through one of its subsidiaries, KLC OpCo also operates accredited high school distance learning programs that have served over 200,000 students since 1975. On a pro forma basis for the fiscal year ended December 31, 2005, KLC OpCo generated revenue and Adjusted EBITDA of $1,477.7 million and $149.9 million, respectively.

KLC OpCo Business Units


KLC OpCo
Early Childhood Education ("ECE")
(Community Centers)
1,812 centers
90% of Pro Forma Revenue
(Employer Sponsored Centers)
122 centers
6% of Pro Forma Revenue
School Partnerships
(Before and after school care)
573 sites
3% of Pro Forma Revenue
Distance Learning
(Online Education)
1% of Pro Forma Revenue

11.2. Early Childhood Education Unit (96% of Pro Forma FYE December 31, 2005 Revenue)

As of FYE December 31, 2005, KLC OpCo provided ECE services through its 1,812 company-operated community centers (90% of pro forma revenue) and 122 employer-sponsored centers (6% of pro forma revenue). In total the ECE Unit operated 1,934 centers in 39 states and Washington D.C., offering ECE programs primarily for children aged six weeks to five years. The programs are marketed primarily under the KinderCare, Children's World, Children's Discovery Centers, Knowledge Beginnings and Mulberry Child Care & Preschool brand names.

KLC OpCo's centers typically contain classrooms, recreational areas, kitchens and bathroom facilities. The centers usually accommodate the grouping of children according to age. The centers have outdoor playgrounds, often with separate areas designed for infants and toddlers, with the exception of some downtown urban centers that may utilize nearby parks. Each center is equipped with a variety of audio and visual aids, educational supplies, games, toys and indoor and outdoor play equipment. In addition, most of the centers are equipped with personal computers with programs specifically designed for both pre-school and school-age children. The typical center can serve between 120–140 students, although actual enrollments can be higher as some children are enrolled on a part-time basis. Children are usually enrolled on a weekly basis for either full-day or half-day sessions. Most centers provide enrolled children with meals and two snacks.

KLC OpCo provides a wide range of quality programs that are continuously updated to reflect current thinking and to meet the needs of individual children. Programs have been developed in conjunction with nationally recognized experts in ECE and various curricula reflect the latest research in brain development. Programs stimulate the social, emotional, intellectual and physical needs of children and each program is age appropriate.

KLC OpCo's ECE facilities are generally open throughout the year, usually five days a week, from 6:30 a.m. to 6:30 p.m. New enrollments are most often highest in September and January, with the largest decrease in enrollment during holiday periods and summer months. Many centers offer summer day camp programs for children up to the age of 12. Additionally, many centers offer "back-up" care, which is offered in the event that the parent's primary child care arrangement is unavailable (*e.g.*, when an in-home provider goes on vacation). The company will provide short-term child care until the parent's child care resumes.

Community Centers

The 1,812 community centers are located in diverse demographic locations. Newly built centers tend to be located in the targeted demographic market of newer upper-middle class to upper income suburban areas with high concentrations of dual income families. In a community center, the current weekly tuition rates for full-day service range from $90 to $400 per child, depending upon the center location and the age of the child. KLC OpCo also offers tutorial programs in areas such as literacy, reading, foreign languages and mathematics in many of its centers for a supplemental fee and is exploring offering additional supplemental fee programs. Tuition is generally paid in advance on a weekly basis and, to a lesser extent, on a monthly basis. The company typically sets tuition for half-day programs at a 20% to 40% premium compared with an equal number of hours for a full-day program. Approximately 20% of tuition is paid under state and federal subsidy programs.

Employer-Sponsored Centers

As of FYE December 31, 2005, KLC OpCo operated 122 corporate or employer-sponsored centers. These centers are typically free-standing, and are located at or near the premises or campus of the employer-sponsor. These sites are different from community centers in that they usually have more square footage per child and larger staff areas. Generally, the corporate sponsor provides the constructed building. KLC OpCo currently has relationships with a diverse group of employers, including hospitals, health care facilities, government agencies, and private sector companies. Its corporate relationships include, but are not limited to, the following: AOL Time Warner, TRW, Lockheed Martin, the World Bank Group, Fox, Maytag, Northrop, TJ Maxx, the National Security Agency, the Mayo Clinic and Stanford University.

Employer-sponsored centers are operated either on a fixed-fee basis (31 centers) or on a profit-and-loss basis (91 centers). Under the former, KLC OpCo receives a fixed fee per month, typically irrespective of occupancy. In these contracts, the Company collects tuition on behalf of the employer sponsor. Under a profit-and-loss contract, KLC OpCo collects tuition for its own account, generally with no guaranteed fees from the employer. In some cases, its operations are subsidized by the employer, typically in the form of tuition subsidies, free or reduced rent, the provision of certain services such as maintenance, landscaping and janitorial services or enrollment guarantees. This enables the company to utilize the subsidies for improved staff quality and teacher / child ratios.

Contract terms typically average between one and five years. Normally the management centers are reserved for children of the corporations' employees. Some contracts provide for accepting non-employee children, for which the company can often charge a higher tuition.

11.3. School Partnerships Unit (3% of Pro Forma FYE December 31, 2005 Revenue)

Through the School Partnerships Unit, KLC OpCo provides customized before and after school educational enrichment and recreational programs for school age and preschool children in partnership with elementary schools. KLC OpCo provides these partnership services primarily through 573 sites in 20 states. Average tuition ranges from $35–$75 per week, payable in advance. Parents account for 94% of total tuition received, while state and grant subsidies account for the remaining 6%.

These before and after school programs are typically conducted in collaboration with public schools and located on-site at public school campuses. The success of the programs has led to the development of summer camps, remedial programs, and drop-in care. Programs are operated under the Champions name. Because each program is relatively small (approximately 40 children per program), operating costs associated with running each program are minimal. Little or no capital investment is required and the contracting school typically provides on-site space for the program. Contract tenures range from one year to evergreen. They often stipulate that KLC pays minimum fees to the elementary schools for use of facilities.

KLC OpCo's November 2004 acquisition of EdSolutions, Inc. ("ESI") provided it entry into the Supplemental Education Services ("SES") tutoring business. The SES business is part of the federal No Child Left Behind Act's effort to improve the performance of students at failing schools. KLC OpCo operates 72 SES sites. ESI is approved to provide SES in 19 states and our plans call for ESI to serve as a platform for future growth for KLC.

11.4. Distance Learning (1% of Pro Forma FYE December 31, 2005 Revenue)

Through its wholly owned subsidiary, KCDL, KLC OpCo also operates accredited high school distance learning programs that have served over 200,000 students since 1975. Based in Portland, Oregon, KCDL operates Keystone National High School and iQ Academies. Keystone National High School is one of the largest and most experienced accredited high school distance learning programs in the country. Keystone is a private, diploma granting school with parents or schools paying for individual courses and/or complete curriculum. Keystone served over 14,000 students in 2005 and offers more than 60 distance learning courses. iQ Academies develops and manages online charter schools. It currently operates one school in Wisconsin, is working on the approval process for another charter in California, and has plans to begin several more charters in the next 12 months. iQ Academies provides support required to launch and operate an online high school including curriculum, instruction, technology, marketing and support. Though only 1% of KLC OpCo's pro forma revenues, KCDL is highly profitable and accounts for almost 2% of KLC OpCo's pro forma Adjusted EBITDA.

11.5. Business Strategy

KLC OpCo's strategy is to drive revenue growth and enhance profitability through a combination of the following initiatives:

- *Expansion of existing business lines*. Management believes that the opportunity exists to significantly expand the scope of its existing business lines:
  - — *Community centers*. KLC OpCo has substantial experience in selecting and opening new community centers. Over the next six years KLC OpCo plans to open 195 new centers which are expected to generate approximately $200 million of gross revenue.
  - — *Employer-sponsored centers*. KLC OpCo expects to continue the expansion of its employer-sponsored centers. Over the next six years KLC OpCo plans to open 124 new centers with gross revenue of approximately $120 million.

- *Rationalize centers to improve overall strategy and quality of network*. Management closely monitors underperforming centers and looks to rationalization opportunities which generally lead to improved Utilization and higher EBITDA generation.
    - — As part of its rationalization, KLC OpCo has identified 50 centers which it intends to close and will continue to evaluate underperforming centers. As a result, over the next six years KLC OpCo expects to close approximately 250 centers with a decrease in revenues of approximately $120 million. While the closure of underperforming centers decreases KLC OpCo's revenue, rationalization is expected to increase both EBITDA and Adjusted EBITDA margins.
- *Strategic acquisitions*. The childcare market remains highly fragmented with for-profit chains comprising only 5% of the entire market. There are over 386,000 family-owned and operated centers, with each providing services to fewer than 13 children. KLC OpCo believes there are many opportunities to consolidate some of the family-run centers as well as some of the larger regional providers.
- *Offer new products and services*. KLC OpCo estimates that it services more than 200,000 families in a given year. KLC OpCo's scope of operations makes it ideally positioned to market other products and services through its learning centers. KLC OpCo has already sold several additional lines of educational products and services at test locations including supplemental phonics, math, Spanish and music courses. KLC OpCo believes that product and service lines can be expanded to include additional educational and non-educational offerings such as medical insurance and student financing programs.
- *Initiation of the Spirit of Service Program*. The fundamental assumption of the Spirit of Service program is that sales are not separate from service—both are driven by relationships. To that end, the Spirit of Service program was designed to promote revenue growth by building a sales-oriented culture while increasing customer / parent engagement. Currently, KLC OpCo's management team is working with consultants from Cypress Consulting and the Gallup Organization to:
    - — Understand and evaluate current practices and expectations regarding sales and service;
    - — Provide reliable data to help grow enrollments through a better understanding of families who have disenrolled and KLC OpCo's current customers;
    - — Develop the sales and coaching skill necessary to support requisite practices and behaviors; and
    - — Institutionalize practices, systems and incentive plans to ensure a sustainable focus and culture built around sales and customer service.

11.6. Sales and Marketing

Early Childhood Care and Education

Community Centers. KLC OpCo's target market is middle-class to affluent ($70,000+ household income), highly educated parents working or residing near the center. Target parents are white-collar workers and are usually dual-income families. KLC looks for sites where it believes the market for its services will support tuition rates higher than current average rates.

Management believes KLC OpCo distinguishes its services by developing and introducing high quality curricula and programs that incorporate both learning and enjoyable activities held in a safe and child-friendly environment. KLC OpCo markets its services through online channels (including strategic click through advertisement placements), as well as traditional methods, such as display advertisements, listings in the yellow pages, newspaper advertisements, distribution of flyers at schools and community functions, and center open house events. KLC OpCo spends a large portion of its advertising budget during the summer months in anticipation of the fall enrollment period, with continued advertising throughout the year. The primary source of new enrollments is recommendations from customers in the communities in which KLC OpCo operates. Center directors are also involved in the marketing process by encouraging parental involvement in the centers through monthly newsletters and reports, parent-teacher conferences and parental visits to, and inspections of, the centers.

Although most of the marketing efforts are performed at the field level, corporate headquarters assists centers in developing marketing programs, designing campaigns, preparing marketing brochures, strengthening the brand name, identifying strategic partners, and providing advice on ways to advertise and market the programs at the local level. In addition, KLC OpCo is actively involved in teaching the staff and directors business enhancing skills, such as cost management, local marketing and customer relations.

Employer-Sponsored Centers. Services that KLC OpCo provides to employers include onsite and near-site center operation, backup care, discount programs, holiday care and consulting services. KLC OpCo has dedicated sales personnel focused on expanding its presence in this market. It also markets its services through relationships with consultants, attendance and presentations with clients at trade shows, networking at conferences and through industry alliances and publications. KLC OpCo responds to requests for proposals, referrals from current clients and prospects to targeted mid-market centers for transition opportunities through mailings and networking. It also targets Fortune 1000 companies for its discount and nationwide backup care services which serve large distributed workforces.

Marketing to employers or corporate sponsors largely takes place at the corporate level. KLC OpCo markets to parents through its employer sponsors and occasionally through contracted resource and referral agencies. KLC OpCo is finding that the preferred method is through electronic brochures and messages as well as dedicated websites for onsite centers and services. KLC OpCo provides hardcopy materials and promotional giveaways primarily through employer-sponsored benefit fairs and events on client campuses. The centers engage parents and potential parents through brown bag lunch seminars, open houses, and visibility tables in client cafeterias and common areas.

School Partnerships

Champions Programs. KLC OpCo positions its Champions school age, preschool and summer programs as exciting combinations of learning and fun. It relies primarily on a regional, direct sales force in effecting a two tiered sales and marketing approach. The first tier consists of selling the Champions service at the appropriate administrative level in the school. This selling generally occurs at the superintendent or principal level. Selling to administrators is necessary since the majority of Champions' programs rely solely on the use of existing school infrastructure. The sales and marketing effort in this tier involves participation in trade shows, featured articles in trade journals, trade magazine advertising and news releases. KLC OpCo believes that these efforts have been successful in heightening brand awareness, and as such, has enabled its sales force to gain access to entire districts versus individual schools.

Once a Champions program receives the endorsement of the appropriate decision-maker, the second tier of the sales and marketing effort begins, which targets the parents of children attending the sponsor school and, in some cases, nearby schools. Marketing is conducted primarily through flyers, open houses and school newsletters.

Supplemental Education Services. The sales and marketing process for SES tutoring involves several steps. First, KLC OpCo must seek approval to provide services in a state through a request-for-proposal process. This process entails detailed descriptions of the curriculum provided and how it correlates with state standards, testing and accountability, the operational model to be provided and company background information. Once approval is obtained at the state level, KLC OpCo contacts districts it is interested in serving, and requests that it be added to the list of approved providers. At the same time that it makes the initial contact with districts, it also contacts local schools, often through such schools' SES coordinator, and subsequently with the parents at each school.

Once KLC OpCo has been approved by the state, district and the schools, it competes with multiple SES providers selling to individual parents, who are the ultimate decision makers in terms of selecting a provider. Many providers are currently offering incentives to children and families to enroll with them and some are offering incentives to schools as well. The key challenge in marketing the SES programs to families is offering something that is appropriate and that will add educational value for families while enticing the children to participate. KLC OpCo believes there is a much larger number of children eligible for services than the number that attend programs and therefore an opportunity exists to improve marketing and outreach to families.

Identifying prospects involves targeting urban areas where there is a cluster of failing schools. Failing schools are schools that fail to meet established NCLB requirements for three years in a row. After the second year of failure the schools have to offer several services in order to prevent being named a failing school. This enables KLC OpCo to project the approximate number of schools that will be considered failing in the next school year and help identify states to pursue and markets that warrant further attention. KLC OpCo is currently authorized to provide SES in 19 states and has already begun providing SES in five of them. KLC OpCo believes the SES business provides an opportunity for growth.

On August 29, 2006, KLC acquired 100% of the membership interests in Education Station, LLC ("Education Station") from Catapult Learning LLC ("Catapult"), a subsidiary of Educate, Inc. (together with Catapult, "Educate") Education Station is a private provider of supplemental educational services under the NCLB and other educational instruction and after school services. The purchase agreement provides for an aggregate purchase price of $6.0 million with $3.0 million paid into escrow at closing, and $1.0 million payable on each of the first three anniversaries of the closing date. The amount in escrow is payable to Educate on three specific dates during the period beginning ninety days from the closing date and ending on July 31, 2007 upon the renewal by Education Station of certain contracts which were in place applicable to the 2005-2006 school year. Also on August 29, 2006, KLC and Educate entered into a technology license agreement where Educate granted a license to KLC of certain proprietary software used in providing real-time online NCLB services. The term of the license agreement is four years and provides for a license fee of $10 million payable in three installments of $3.0 million within 30 days following each of the first three anniversaries of the closing date and a final installment of $1 million within 30 days following the fourth anniversary. KLC believes that the acquisition of Education Station makes it the largest for-profit provider of supplemental education services under the NCLB in the U.S.

Distance Learning

KLC OpCo markets its distance learning products to two distinct customer groups: the home school market and schools. Purchases made into the home school market are driven by web-based marketing efforts and trade associations along with a direct mail campaign. Purchases made by schools are marketed to counselors and administrators through direct mail and telemarketing efforts.

11.7. Curriculum

KLC OpCo believes that it can increase enrollment in its centers by continuing to develop and introduce high quality curricula and programs that provide parents with meaningful reasons to choose the centers for their children over other alternatives. It has designed research-based, proprietary curricula for age-specific educational and recreational programs to develop a child's social, intellectual and physical skills and distributed curriculum manuals for each age group to its centers. These programs are used as a framework, within which individual teachers have flexibility to create daily instruction opportunities that are tailored to the needs of each class.

The curriculum covered by the "Early Foundations" program is carefully designed to support school readiness. Activities are developed and implemented based on an expansive, research-based framework of educational objectives. These objectives mirror well documented early learning standards. Frequent assessment insures both program quality and desirable child outcomes.

The Early Foundations program focuses on providing individual learning opportunities that are flexible and appropriate to each child's development level. KLC OpCo believes that the Early Foundations program distinguishes the Company from other child care providers.

11.8. Management Team and Board of Directors

KLC OpCo is led by a highly experienced management team comprised of experts in the field of education, as well as business professionals. This combination of talent is expected to drive continued success of KLC OpCo. These individuals are also supported by a seasoned executive and middle management team with average Company tenure of ten years. The following table sets forth KLC OpCo's management team and the board of directors of its parent company, KSI. Detailed biographies can be found in Appendix A.

Management of KLC

Name	Position
Elanna Yalow	Director, President and Chief Operating Officer
Mark Moreland	Executive Vice President & Chief Financial Officer
Toni Jaffe	Senior Vice President, Human Resources
Eva Kripalani	Senior Vice President, General Counsel and Corporate Secretary
Marcy Suntken	Senior Vice President, School Partnerships
Dan Frechtling	Senior Vice President, Marketing and Business Development
Sharon Bergen	Senior Vice President, Education and Training
Stephen Brown	President and Chief Executive Officer, KCDL

Non-Employee Directors of Knowledge Schools Inc. ("KSI")

Name	Position
Les Biller	Retired Vice Chairman and Chief Operating Officer of Wells Fargo & Company. KUE Advisory Board
Ralph Finerman	President of RFG Financial Group, Inc.
Stephen Goldsmith	Professor of Government at Harvard University's Kennedy School of Government. Senior Vice President of KUE
Steven Green	Chairman and CEO of k1 Ventures and Greenstreet Real Estate Partners. Vice Chairman of KUE
Stanley Maron	Senior shareholder in the law firm Maron & Sandler
Lowell Milken	Chairman of KSI Board, President and Chief Executive Officer of KUE
Wendi Murdoch	Advisor to News Corporation
Jeff Safchik	Co-founder, Managing Director and Chief Financial Officer of Greenstreet Real Estate Partners. Chief Financial Officer of KUE
Richard Sandler	Shareholder in the law firm Maron & Sandler. General Counsel for KUE

11.9. Employees

As of December 31, 2005, KLC OpCo employed approximately 40,000 non-unionized personnel. Of the total amount, 39,639 are employed at the field level (including teachers and center staff, center directors, facilities and field and regional staff) and 592 are employed at the corporate level. Given the seasonality of the child care business and the regulated teacher-student ratio that varies by age with each state, approximately 16.5% of the total field personnel are employed on a part-time basis. Teachers and teaching assistants, which account for 93% of the total employee pool, are paid on an hourly basis. Most of KLC OpCo's remaining employees, including District Managers as well as most corporate staff, are salaried. KLC believes that its relations with its employees are good.

KLC OpCo's management believes that its below-industry average turnover rates are a result of its hiring practices and closer involvement in center operations, a focus on treating teachers as educators and not just employees, and comprehensive training programs that are designed to ensure that teachers are successful. KLC OpCo believes that it has the opportunity to reduce employee turnover further through improved recruiting, training and management.

The following table presents a breakdown of employees as of December 31, 2005:

KLC Employee Breakdown

Employee Type	Number
Teachers and Center Staff	37,440
Center Directors	1,874
Corporate	592
Facilities	218
Field / Regional Staff	107
Total	**40,231**

11.10. Accreditation

KLC OpCo pursues accreditation of its centers by accrediting bodies, primarily the National Association for the Education of Young Children (referred to herein as "NAEYC"), the nation's leading child care accreditation body. NAEYC accreditation criteria cover a wide range of quantitative and qualitative factors, including, among others, faculty qualifications and development, staffing ratios, health and safety and physical environment. NAEYC criteria generally are more stringent than state regulatory requirements. As of December 31, 2005, KLC OpCo had 831 or approximately 43% of its total ECE centers that were accredited by NAEYC. Of the approximately 117,000 licensed centers in the U.S., approximately 10% are accredited by NAEYC.

Management believes that substantially all of its centers' operations and policies adhere to or are substantially compliant with NAEYC accreditation requirements. Since the accreditation process is expensive, KLC OpCo intends to seek accreditation only where it believes accreditation will provide meaningful local marketing benefits or competitive advantages.

11.11. Licensing and Government Regulation

Each early childhood care and education center and most school programs must be licensed under applicable state or local licensing laws. Responsibility for licensing and compliance with government regulations is at the regional and local level. Licenses are held at the center level or by the school program and are typically good for a minimum of one year. Generally, the center or school program will reapply for a license on an annual basis, and that process may include a visit from the applicable state regulator. Renewal of a license is generally a fairly routine process.

In addition, each ECE center or school program is subject to a variety of state and local regulations. Although these regulations vary greatly from jurisdiction to jurisdiction, governmental agencies generally review the safety, staff qualifications, fitness and adequacy of the buildings and equipment; the ratio of staff to children; the dietary program; the daily curriculum and compliance with health and transportation standards. In most jurisdictions, these agencies conduct scheduled and unscheduled inspections of locations. Repeated failures by a location to comply with applicable regulations can subject it to sanctions that might include probation or, in more serious cases, suspension or revocation of the center's or program's license to operate and could also lead to sanctions against the Company's other centers or programs located in the same jurisdiction. In addition, this type of action could lead to negative publicity extending beyond that jurisdiction.

KLC OpCo generally seeks to operate centers and school programs in states with strict regulations in order to avoid unexpected expense and market disruption that may be caused by compliance with regulations adopted in states that previously lacked such regulations.

KLC OpCo believes that its operations are in substantial compliance with all material regulations applicable to its business. However, a licensing authority may determine that a particular center or school program is in violation of applicable regulations and may take action against that center or program and possibly other centers in the same jurisdiction. In addition, there may be unforeseen changes in regulations and licensing requirements, such as changes in the required ratio of child center staff personnel to enrolled children, which could have a material adverse effect on KLC OpCo's operations. States in which KLC OpCo operates routinely review the adequacy of regulatory and licensing requirements and implement changes which may significantly increase its costs to operate in those states.

The SES programs are operated in substantial compliance with the federal No Child Left Behind Act, as well as applicable state Department of Education regulations that vary from state to state, but generally regulate curriculum, staff qualifications, and program quality and effectiveness. KLC OpCo must receive approval from each state's Department of Education in order to qualify as an SES provider. The length of approval to be an SES provider varies, but is typically from one to five years. Repeated failure by an SES provider to comply with regulations or its request for proposal documentation may cause the provider to lose its approval.

Federal regulations and licensing requirements require compliance with minimum standards in order to qualify for participation in federal assistance programs. Under the Social Security Act, the U.S. federal government has established programs to assist low-income families with early childhood care and education expenses. These programs include the Childcare and Development Block Grant and At Risk Program. Funding is typically provided through block grants to states and counties, which then administer the programs through local agencies.

The federal Americans with Disabilities Act, referred to as the ADA, and similar state laws prohibit discrimination on the basis of disability in public accommodations and employment. Compliance with the ADA requires that public accommodations reasonably accommodate individuals with disabilities and that new construction or alterations made to commercial facilities conform to accessibility guidelines unless structurally impracticable for new construction or technically infeasible for alterations. Non-compliance with the ADA could result in the imposition of injunctive relief, fines, an award of damages to private litigants and additional capital expenditures to remedy such noncompliance. KLC OpCo has not experienced any material adverse impact as a result of these laws.

Section 21 of the U.S. Internal Revenue Code of 1986, as amended (the "Code"), provides for an income tax credit ranging from 20% to 35% of certain child care expenses subject to certain maximum limitations. The fees paid to KLC OpCo for early childhood care and educational services by eligible taxpayers qualify for the tax credit, subject to the limitations of the Code. In addition, Section 45F of the Code provides incentives to families and employers to offset costs related to employer-provided child care facilities. However, these tax incentives are subject to change.

KLC OpCo is also subject to the Fair Labor Standards Act, which governs such matters as minimum wages, overtime compensation and working conditions. All of KLC OpCo's employees are paid at rates equal to or higher than the federal minimum wage.

KLC OpCo is also subject to laws regulating its transportation of children. In 1998, the National Highway Traffic Safety Administration, or NHTSA, issued interpretive letters stating that automobile dealers may no longer sell 12 to 15-passenger vans intended to be used for the transportation of children to and from school by child care providers and that any vehicle designed to transport 11 persons or more must meet federal school bus standards if it is likely to be used significantly to transport children to and from school or school-related events. These interpretations and related changes in state and federal transportation regulations have affected the type of vehicle that the company may purchase for use in transporting children between schools and its centers and, in effect, required KLC OpCo to replace its remaining fleet of vans with school buses over time. These changes have increased the company's costs to transport children because school buses are more expensive to purchase and maintain and, in some jurisdictions, require drivers with commercial licenses.

11.12. Insurance

KLC OpCo's insurance program currently includes the following types of policies: workers' compensation, commercial general liability, automobile liability, property, excess "umbrella" liability, directors' and officers' liability and employment practices liability. These policies provide for a variety of coverages, which are subject to various limits, and include substantial deductibles or self-insured retentions. Special insurance is sometimes obtained with respect to specific hazards, if deemed appropriate and available at a reasonable cost. Claims in excess of, or not included within, KLC's coverage may be asserted or coverage may not be available due to insurance company failures or other reasons.

KLC OpCo maintained either a self-insured retention or a deductible for a portion of its general liability, workers' compensation, auto, property and employee medical insurance programs. It purchases stop loss coverage in order to mitigate its potential future losses. The nature of these liabilities, which may not fully manifest themselves for several years, requires significant judgment. KLC OpCo estimates the obligations for liabilities incurred but not yet reported or paid based on available claims data and historical trends and experience, as well as future projections of ultimate losses, expenses, premiums and administrative costs. While the company believes that the amounts accrued for these obligations are sufficient, any significant increase in the number of claims and/or costs associated with claims made under these programs could have a material adverse effect on the consolidated financial statements.

11.13. Legal Issues

KLC OpCo does not believe that there are any pending or threatened legal proceedings that, if adversely determined, would have a material adverse effect on its business or operations. However, it is subject to claims and litigation arising in the ordinary course of business, including claims and litigation involving allegations of physical or sexual abuse of children. Although KLC OpCo cannot be assured of the ultimate outcome of the allegations, claims or lawsuits of which it is aware, it has not historically had to pay any claims exceeding its insurance coverage, and management believes that none of these allegations, claims or lawsuits, either individually or in the aggregate, will have a material adverse effect on the Company's financial position, operating results or cash flows. In addition, it cannot predict the negative impact of publicity that may be associated with any such allegation, claim or lawsuit.

11.14. Real Estate

As a result of a November 9, 2005 Real Estate Transaction, substantially all of the real estate owned by KLC OpCo was transferred to KLC PropCo. Although the expectation is that newly acquired real estate will be owned by KLC PropCo and leased back to KLC OpCo, KLC OpCo continues to be actively involved in new center design, development and management. In addition to development of new centers, the team is responsible for maintaining existing centers. The real estate group within KLC OpCo is headed by Wayne Pipes, Vice President.

11.15. Environmental

KLC OpCo is not aware of any existing environmental conditions that currently or in the future could reasonably be expected to have a material adverse effect on its financial position, operating results or cash flows. It has not incurred material expenditures to address environmental conditions at any property. However, it has not undertaken an in-depth environmental review of all of its owned and leased centers. Consequently, there may be material environmental liabilities of which it is unaware.

In addition, future laws, ordinances or regulations may impose material environmental liability, and the current environmental condition of the centers may be adversely affected by conditions at locations in the vicinity of those centers (such as the presence of leaking underground storage tanks) or by third parties unrelated to the company.

11.16. Summary Financial Information and Projections Discussion

The following summary historical and projected financial data should be read in conjunction with the financial statements and "Management's Discussion and Analysis of KLC's Pro Forma Results of Operations" presented elsewhere in this Memorandum. See also "Non-GAAP Financial Measures" elsewhere in this Memorandum for a discussion of the derivation and limitations of Adjusted EBITDA and Adjusted EBITDAR. The historical information is pro forma for the effects of the acquisition of KinderCare in January 2005 and the separation of KLC into KLC OpCo and KLC PropCo in November 2005, as if those transactions and related financing had occurred on January 1, 2004.

KLC OpCo's pro forma results reflect KLC's consolidated pro forma results adjusted to include $96.3 million of rent expense payable to KLC PropCo.

Projected results presented below are based on assumptions management believes to be reasonable, but which are inherently uncertain and may not be realized. KLC OpCo's ability to perform as projected depends on a number of variables that cannot be predicted with certainty and actual performance could be adversely affected by a number of factors, including those described in "Risk Factors," particularly the risk factor related to projections elsewhere in this Memorandum. Also see "Forward-Looking Statements."

KLC OpCo Summary Historical Pro Forma and Projected Financials

	Fiscal Year Ended December 31,							
($ in millions)	**2004PF**	**2005PF**	**2006P**	**2007P**	**2008P**	**2009P**	**2010P**	**2011P**
OPERATIONAL DATA								
Revenue	$1,442.2	$1,477.7	$1,557.8	$1,656.5	$1,769.6	$1,919.7	$2,095.8	$2,290.8
Growth		*2.5%*	*5.4%*	*6.3%*	*6.8%*	*8.5%*	*9.2%*	*9.3%*
Gross Profit	$233.3	$244.4	$290.7	$320.6	$354.0	$396.2	$448.2	$501.3
Adjusted EBITDA	$143.3	$149.9	$161.7	$179.9	$204.8	$237.5	$279.0	$320.1
Margin	*9.9%*	*10.1%*	*10.4%*	*10.9%*	*11.6%*	*12.4%*	*13.3%*	*14.0%*
Adjusted EBITDAR	$352.8	$367.4	$371.4	$391.4	$419.6	$459.7	$510.8	$568.6
Margin	*24.5%*	*24.9%*	*23.8%*	*23.6%*	*23.7%*	*23.9%*	*24.4%*	*24.8%*
Operating Income		$27.1	$78.9	$101.6	$117.8	$146.9	$179.5	$212.4
Total Interest Expense		23.5	23.6	23.5	23.4	23.3	23.1	22.9
Net Income[1]		$1.6	$31.1	$46.0	$56.9	$77.4	$98.3	$117.9
BALANCE SHEET DATA								
Cash		$118.8	$154.2	$215.8	$288.5	$373.7	$484.8	$621.2
Accounts Receivable		55.6	58.6	62.4	66.6	72.3	78.9	86.2
PP&E, Net		286.6	301.9	305.9	309.4	315.0	315.6	311.1
Accounts Payable		13.0	13.7	14.6	15.6	16.9	18.4	20.1
SELECTED CASH FLOW DATA								
Net Income (Loss)[1]		$1.6	$31.1	$46.0	$56.9	$77.4	$98.3	$117.9
+ Depreciation		47.9	54.6	56.2	61.5	67.3	74.2	80.9
+ Amortization of Intangibles		11.6	12.8	10.0	8.8	3.6	3.5	3.5
+ Amortization of Deferred Financing Fees		0.8	0.8	0.8	0.8	0.8	0.8	0.8
+ Change in Working Capital[2]		0.0	2.8	3.4	3.9	5.2	6.1	6.8
+ Change in Accrued LTIP[3]		0.0	2.6	4.0	4.5	2.4	1.1	0.6
+ Change in Accrued SAR[4]		9.9	2.1	3.1	3.2	3.7	4.7	5.6
+ Change in Other Assets		0.0	(0.6)	(0.8)	(0.9)	(1.2)	(1.4)	(1.5)
= Operating Cash Flow		**$71.9**	**$106.0**	**$122.7**	**$138.7**	**$159.3**	**$187.4**	**$214.5**
- Capital Expenditures		(83.1)	(69.9)	(60.2)	(65.0)	(72.8)	(74.8)	(76.4)
- Capitalized Lease Payments		(0.5)	(0.8)	(0.9)	(1.0)	(1.3)	(1.5)	(1.7)
= Cash for Debt Service		**$(11.7)**	**$35.4**	**$61.6**	**$72.7**	**$85.2**	**$111.1**	**$137.9**
CAPITALIZATION								
Total Debt		$276.4	$275.6	$274.7	$273.7	$272.5	$271.0	$269.3
Shareholders' Equity[5]		254.1	283.1	330.1	390.7	474.8	583.6	721.1
Total Capitalization		**$530.5**	**$558.7**	**$604.9**	**$664.4**	**$747.3**	**$854.6**	**$990.4**

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[1] *Excludes equity in earnings of unconsolidated subsidiary (KLC PropCo).*
[2] *KLC has not divided change in working capital between KLC OpCo and KLC PropCo. Traditionally KLC OpCo operates with positive working capital.*
[3] *For additional detail, see the discussion below under the heading "– Long Term Incentive Plan."*
[4] *Non-cash expenses related to KSI's Stock Appreciation Rights Plan attributed to KLC's employees and payable by KSI in cash upon settlement.*
[5] *Represents book value.*

Revenue

Management projects revenue to increase at a 8.0% CAGR, from $1.6 billion in 2006 to $2.3 billion in 2011. Most of the projected growth stems from KLC OpCo's ECE segment which currently accounts for approximately 96.0% of KLC OpCo's pro forma revenue. The following table shows projected revenue by business segment:

KLC OpCo

($ in millions)	2006P	2007P	2008P	2009P	2010P	2011P
ECE Centers	$1,488.7	$1,572.8	$1,668.4	$1,797.1	$1,947.4	$2,111.1
School Partnerships	55.5	66.6	79.9	95.9	115.1	138.1
KC Distance Learning	13.6	17.1	21.3	26.7	33.3	41.6
Total Revenue	**$1,557.8**	**$1,656.5**	**$1,769.6**	**$1,919.7**	**$2,095.8**	**$2,290.8**

Sales Growth

From 2006 to 2011 KLC OpCo projects that revenue from the ECE centers will grow at a 7.2% CAGR. The growth forecast is based on the following assumptions:

- *Tuition growth.* KLC OpCo projects that tuition rates at existing centers will grow at approximately 4% per year for the next five years. This growth is below recent experience (6.9% in 2005). Moreover, tuition rates in the industry have been growing at average rates of greater than 4%.

- *Utilization improvement.* Management projects that recent improvements witnessed at KLC OpCo will continue. By 2011, KLC OpCo projects Utilization will have increased to 65.2%. Management believes these improvements in Utilization will be the result of expected favorable demographic trends (described elsewhere in this Memorandum), new sales training programs, re-branding efforts in selected markets combined with the opening of appropriately sized centers.

- *New centers.* KLC OpCo expects a net reduction of centers in 2006 and 2007 as it completes its integration of KinderCare and the rationalization of its properties. Beginning in 2008, KLC OpCo projects to be adding net centers.

KLC OpCo

	2005PF	2006P	2007P	2008P	2009P	2010P	2011P
Utilization	*61.2%*	*62.2%*	*63.0%*	*63.5%*	*63.9%*	*64.5%*	*65.2%*
Average Weekly Tuition	$167.35	$173.68	$179.99	$188.37	$197.47	$206.95	$216.52
% Growth	--	*3.7%*	*3.6%*	*4.7%*	*4.8%*	*4.8%*	*4.6%*
Center Count							
Beginning of Period	2,021	1,934	1,894	1,878	1,890	1,925	1,963
New Center Additions	10	10	24	52	75	78	80
Closures	(97)	(50)	(40)	(40)	(40)	(40)	(40)
End of Period	**1,934**	**1,894**	**1,878**	**1,890**	**1,925**	**1,963**	**2,003**

Additional Products and Services

KLC OpCo plans to use its footprint of approximately 2,000 centers across the U.S. as a platform to sell additional educational (*e.g.*, supplemental phonics, math, Spanish and music courses) and non-educational (*e.g.*, health insurance, childcare financing) products and services. The sale of additional products and services is expected to generate approximately 2.2% of total revenue in 2011, which is included in the ECE center projections.

School Partnerships

School Partnerships is projected to grow from $48.5 million in pro forma revenues in 2005 to $138.1 million in 2011. As a percentage of revenue, School Partnerships accounts for 3.3% of total pro forma revenue in 2005, and is projected to grow to 6.0% in 2011. KLC OpCo projects that growth in the School Partnerships business will be primarily driven by growth in the SES market (more school districts required to offer supplemental services), and an increase in the number of parent pay locations in the U.S.

KC Distance Learning

KCDL is projected to grow from $10.0 million in pro forma revenues in 2005 to $41.6 million in 2011. As a percentage of revenue, KCDL accounts for 0.7% of total pro forma revenue in 2005, and is projected to grow to 1.8% in 2011. KLC OpCo projects that growth in this line will predominantly come from the expansion of KCDL's direct to family business (which currently accounts for approximately 90% of pro forma revenue) and the expansion of states to digital high school courses (which KLC believes it is in a position to provide on an outsourced basis).

Gross Margin

KLC OpCo's pro forma gross profit is projected to increase from $244.4 million in 2005 to $501.3 million in 2011. The growth in gross profit is projected to be largely driven by increased center efficiency as a result of improved Utilization, continued tuition increases and the closure of underperforming centers and shift in the revenue mix to more profitable business lines (*i.e.*, more employer-sponsored centers, KCDL, ancillary products and services). KLC OpCo's gross margin is projected to improve from approximately 16.5% of total revenues in fiscal year 2006 to 21.9% in fiscal year 2011 as a result of these factors.

Selling, General and Administrative Expenses

Due to the relatively fixed nature of KLC OpCo's selling, general and administrative (SG&A) expenses, KLC OpCo projects that SG&A will increase at a rate of 4.5% annually after 2006. Additionally, management estimates that there will be a one-time increase of $2.0 in SG&A related to the expansion of the SES business in 2007.

Adjusted EBITDA and Adjusted EBITDA Margins

KLC OpCo projects improving pro forma Adjusted EBITDA from $149.9 million in fiscal year 2005 to $320.1 million in fiscal year 2011. Pro forma Adjusted EBITDA margin is expected to improve from 10.1% in fiscal year 2005 to 14.0% in fiscal year 2011. This projected margin improvement reflects the combination of increasing sales and margin improvements outlined above. The table below shows the calculation of pro forma Adjusted EBITDA.

	KLC OpCo						
	2005PF	2006P	2007P	2008P	2009P	2010P	2011P
EBITDA	$86.6	$146.3	$167.8	$188.1	$217.8	$257.1	$296.8
Adjustments to EBITDA							
Restructuring Charge Addback[1]	$29.4	$6.3	$0.0	$0.0	$0.0	$0.0	$0.0
(Gains) / Losses on Sales[2]	(1.3)	0.0	0.0	0.0	0.0	0.0	0.0
Dividend Income[3]	(0.5)	0.0	0.0	0.0	0.0	0.0	0.0
SAR Plan[4]	9.9	2.1	3.1	3.2	3.7	4.7	5.6
Estimated Parallel Organization Costs[5]	23.3	2.0	0.0	0.0	0.0	0.0	0.0
Management Fee[6]	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Long Term Incentive Plan[7]	0.0	2.6	6.6	11.1	13.5	14.6	15.2
Adjusted EBITDA	$149.9	$161.7	$179.9	$204.8	$237.5	$279.0	$320.1

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[1] *Represents one-time non-recurring costs of integrating AER and KinderCare acquisitions in 2004 and 2005 respectively.*

[2] *Represents the non-cash impact of (gains) / losses on the sale of centers.*

[3] *Income earned as a result of ownership in a minority investment.*

[4] *Represents accruals related to KSI's SAR plan. Approximately $7.8 million has been paid pursuant to SARs in connection with the departure of KLC's chief executive officer in 2006.*

[5] *Result of the costs of operating duplicative infrastructure at KLC and KinderCare following the KinderCare acquisition.*

[6] *Management fee paid to affiliate entities.*

[7] *For more information, see the discussion below under the heading "– Long Term Incentive Plan."*

Long Term Incentive Plan

Our Adjusted EBITDA projections do not include the effect of any payments that may be made pursuant to our Long Term Incentive Compensation Plan. Under this new plan, which provides performance-based incentive compensation awards beginning in 2006 based on our performance against specific Adjusted EBITDA targets, we will accrue expenses ranging from $2.6 million in 2006 to $15.2 million in 2011 if our Adjusted EBITDA meets the projections set forth in this Memorandum. Each award is payable at the end of three years based on performance and subject to continued employment (with certain exceptions). The accrued expenses associated with an award in each period are non-cash, subject to cash settlement when and if the award for that period is earned at the end of the third year. The actual expenses could be higher or lower depending on whether actual Adjusted EBITDA performance exceeds or is less than the amounts projected herein.

Working Capital

KLC OpCo does not expect revenue or expenses to have a meaningful impact on working capital ratios in the future.

Capital Expenditures

The following table shows the breakdown in KLC OpCo's projected capital expenditures:

KLC OpCo						
($ in millions)	**2006P**	**2007P**	**2008P**	**2009P**	**2010P**	**2011P**
Maintenance	$41.1	$40.8	$41.0	$41.8	$42.6	$43.5
New Centers (Furniture, Fixtures &Equipment)	10.1	7.2	15.6	22.5	23.4	24.0
IT Spending and Other Capex	18.6	12.2	8.4	8.6	8.8	9.0
Total Capital Expenditures	**$69.9**	**$60.2**	**$65.0**	**$72.8**	**$74.8**	**$76.4**

Between 2006 and 2011, KLC OpCo projects to spend between $41 million and $44 million annually on maintenance capital expenditures (approximately $22,000 on a per center basis), which includes refurbishment of its existing centers and equipment and supplies replacement costs. In addition, KLC OpCo expects to spend approximately $19 million in 2006 on corporate infrastructure improvements, primarily IT spending. The remainder of KLC's OpCo capital expenditures is projected to be used to expand KLC OpCo's center base. Beginning in 2007 KLC projects that it will only open leased centers; KLC OpCo believes that its cost of furnishing each center will be approximately $300,000 per center.

11.17. Debt Summary

The table below shows KLC OpCo's outstanding debt as of December 31, 2005.

KLC OpCo Debt Capitalization	
($ in millions)	**12/31/05**
Cash	$118.8
Revolver[1]	$0.0
Capital Leases	16.4
Senior Subordinated Notes	260.0
Total KLC OpCo Debt	$276.4
Net Debt[2]	$157.6

[1] *KLC OpCo has a $100 million revolver, primarily used to support outstanding letters of credit.*

[2] *Represents total debt less cash.*

11.18. Terms of Revolving Credit Facility

In November 2005, KLC entered into a revolving credit facility (the "Revolver") with a syndicate of financial institutions consisting of a $100.0 million five-year revolving credit facility under which revolving and swingline loans may be made, and letters of credit may be issued in amounts up to $75.0 million. The Revolver is used for KLC's working capital and general corporate requirements. At December 31, 2005, KLC had no revolving loans outstanding and approximately $46.6 million in letters of credit outstanding under the Revolver. KLC pays a commitment fee equal to 0.50% per annum on the undrawn portion available under the Revolver and a fee of 1.25% per annum of the daily amount available to be drawn under outstanding letters of credit.

Borrowings under the Revolver will generally bear interest based on a margin over, at KLC OpCo's option, either the base rate (generally the applicable prime lending rate, as announced from time to time) or the reserve adjusted LIBOR rate. The applicable margin for revolving loans will be 0.25% for base rate loans and 1.25% for reserve adjusted LIBOR loans. KLC is permitted to voluntarily prepay principal amounts outstanding or reduce commitments under the Revolver at any time, in whole or in part, without premium or penalty.

The Revolver is fully and unconditionally guaranteed by KSI and on a joint and several basis by most of KLC's direct and indirect domestic subsidiaries within KLC OpCo. The Revolver and guarantees are secured by first priority security interests in, and liens on, substantially all of KLC OpCo's and the guarantors' assets and first priority pledges of all the equity interests owned by KSI in KLC and owned by KLC in its direct and indirect domestic subsidiaries in KLC OpCo and 66% of the equity interests owned by KLC in its non-domestic subsidiaries.

The revolving credit facility contains customary affirmative and negative covenants for financings of its type (with customary exceptions). The financial covenants include: a minimum fixed charge coverage ratio test; a minimum leverage ratio test; a minimum interest coverage ratio test; and a minimum EBITDA test.

Operating covenants limit KLC's and its restricted subsidiaries, and in certain cases, KSI's ability to (among others): incur additional debt; incur liens or other encumbrances; make investments; make acquisitions; incur certain contingent liabilities; make certain restricted junior payments and other similar distributions; enter into mergers, consolidations and similar combinations; sell assets or engage in similar transfers; open new learning centers; engage in transactions with affiliates; enter into sale-leaseback transactions; engage in businesses other than those in which KLC and its restricted subsidiaries and KSI were engaged at the time of the closing of the Revolver and other related or ancillary businesses; amend certain material agreements; prepay subordinated debt; sell or discount receivables; and dispose of any equity securities in its subsidiaries.

11.19. Terms of Senior Subordinated Notes

In February 2005, KLC sold $260.0 million in aggregate principal amount of 7¾% Senior Subordinated Notes due February 1, 2015 (the "Notes") in connection with the KinderCare acquisition and related financing transactions. The Notes bear interest at the rate of 7¾% per year, payable semi-annually, in arrears, on February 1 and August 1 of each year.

KLC may redeem the Notes, in whole or in part, on or after February 1, 2010 at certain pre-set redemption prices, plus any accrued and unpaid interest. On or prior to February 1, 2010 KLC may redeem the Notes in whole, but not in part, at a redemption price equal to 100% of the principal amount of the Notes to be redeemed plus an applicable premium. In addition, on or prior to February 1, 2008 KLC may redeem up to 35% of the aggregate principal amount of the Notes with the net proceeds of one or more qualified equity offerings.

Subject to KLC's right to redeem the Notes, upon a change of control event, holders of the Notes may require KLC to repurchase all or a portion of the Notes at a purchase price of 101% of their principal amount, plus accrued and unpaid interest.

KLC's obligations under the Notes are fully and unconditionally, and jointly and severally, guaranteed on a senior subordinated basis by most of KLC's domestic restricted subsidiaries within KLC OpCo.

The indenture governing the Notes contains covenants that limit KLC and its restricted subsidiaries' ability to, among other things: (a) pay dividends, redeem capital stock and make other restricted payments and investments; (b) incur additional debt or issue preferred stock; (c) enter into agreements that restrict KLC subsidiaries from paying dividends or other distributions, making loans or otherwise transferring assets to

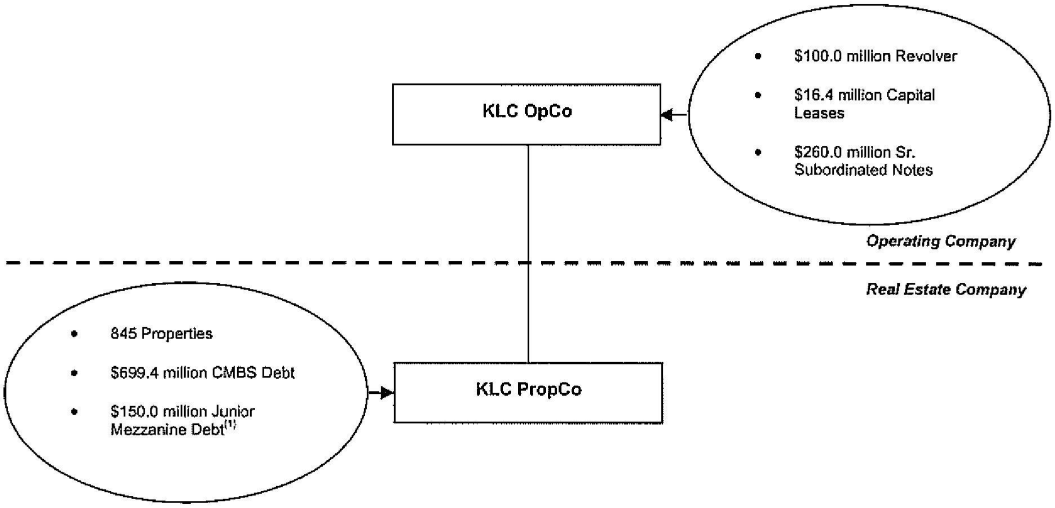
KLC or to any other subsidiaries; (d) create liens on assets; (e) engage in transactions with affiliates; (f) sell assets, including capital stock of subsidiaries, except permitted real estate transfers and other permitted transfers; and (g) merge, consolidate or sell all or substantially all of KLC's assets and the assets of KLC's subsidiaries except permitted real estate transfers and other permitted transfers.

11.20. Stockholders Agreement of Knowledge Schools, Inc.

KLC is a wholly owned subsidiary of KSI, and KSI pursues no other businesses independent of holding KLC's stock/equity. KSI entered into a Stockholders Agreement on May 9, 2003 with Knowledge Universe Learning Corp. (the "KSI Parent") and its minority stockholders (the "Stockholders"). The Agreement provides (a) the KSI Parent (and/or any "Parent Entities" designated by the KSI Parent, which include the KSI Parent and/or certain of the Principals and certain affiliates of the KSI Parent and the Principals) with a right of first refusal over proposed transfers of other Stockholders' shares, subject to certain exceptions; (b) Stockholders, to the extent they are accredited investors, with a right to invest in new issuances of KSI shares; (c) Stockholders with tag-along rights in connection with a transfer of KSI common stock by any of the Parent Entities resulting in the Parent Entities owning less than 60% of KSI common stock then outstanding, or a transfer of securities by any of the Parent Entities resulting in the Parent Entities owning less than a majority of KSI common stock then outstanding. Stockholders are also subject to a drag-along provision, pursuant to which they may be required to sell a pro rata portion of their shares in the event of a proposed transfer of a majority of KSI common stock then outstanding. Each Stockholder and the KSI Parent are entitled to receive certain financial information from KSI. The Agreement terminates upon a public offering of KSI, at the option of the KSI Parent upon a sale of KSI, or by written agreement of the parties. Knowledge Universe Learning Corp. was liquidated on October 27, 2004 and the shares of KSI were distributed on that date to its sole stockholder, KUE Inc.

12. THE REAL ESTATE COMPANY ("KLC PROPCO")

On November 9, 2005, KLC transferred ownership of 845 ECE centers into wholly owned, bankruptcy remote subsidiaries, which are referred to as KLC PropCo. In October 2005, 713 of the centers were independently appraised at approximately $1.1 billion.[36] KLC PropCo then issued $700 million of CMBS debt secured by the 713 appraised centers and the stock of the CMBS borrower, and $150 million of junior mezzanine debt, the proceeds of which were used to repay KLC OpCo debt. The table below summarizes the revised corporate structure at KLC:



(1) Represents face value; book value is approximately $147.3 million.

With 845 ECE centers in 37 states (as of December 31, 2005), KLC PropCo believes it is the largest private owner of education real estate assets in the world. The real estate portfolio is geographically diversified without significant concentrations or ties to any single part of the U.S. KLC PropCo leases its centers to KLC OpCo for an aggregate annual rent of $96.3 million. The lease agreement, which was signed in November 2005, carries an initial term of 15 years with two extensions available for five years each and an escalation of rent by the lesser of 7% or the CPI every fifth year. All of the properties have been leased to KLC OpCo on a "triple-net" basis, requiring KLC OpCo to fund all property taxes, insurance expenses related to the properties and all maintenance capital expenditures. For the fiscal year ended December 31, 2005, KLC PropCo generated pro forma rental revenue of $96.3 million and EBITDA of $88.1 million.

12.1. KLC PropCo Strategy

- KLC PropCo was separated from KLC OpCo to create a flexible vehicle to address the growing opportunity in education related real estate. The ongoing need for facility-based education is driving increased demand for real estate assets that can accommodate the facilities.

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[36] *Actual appraisal was for 713 centers and the appraised value was $1.1 billion. The $1.25 billion referred to within this Memorandum is achieved by taking the independent appraisal valuation methodology and extrapolating it to the remaining 132 centers.*

- Leverage Greenstreet Real Estate Partners' significant expertise:
    - — KLC believes it is able to better maximize the potential of its real estate assets by having them managed by a dedicated and highly experienced team at Greenstreet Real Estate Partners rather than having them managed at the operating company level.
- Cash generated will be reinvested in acquiring more assets.
- Diversify the real estate portfolio:
    - — The Greenstreet Real Estate Partners team is actively looking at diversification and reinvestment opportunities for the real estate portfolio. The diversification strategy will include some opportunistic investments in non-education related real estate assets.

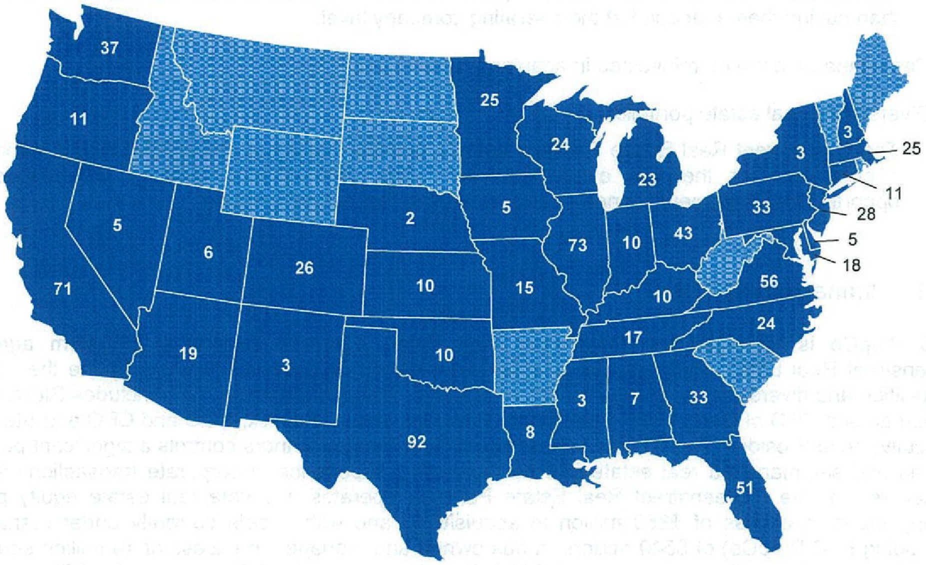
12.2. Management Team

KLC PropCo is managed by Greenstreet Real Estate Partners through a long-term agreement. Greenstreet Real Estate Partners has a highly experienced management team to guide the continued acquisition and diversification of the real estate portfolio. The management team includes Steven Green, Chairman and CEO of Greenstreet Real Estate Partners, Jeffrey Safchik, COO and CFO and Steven Cox, Executive Vice President Real Estate. Greenstreet Real Estate Partners controls a significant portfolio of owned and self-managed real estate and has extensive experience in corporate transactions involving owned real estate. Greenstreet Real Estate Partners operates a private real estate equity platform, having made in excess of $850 million in acquisitions and with assets currently under management (excluding KLC PropCo) of $540 million. It has owned and managed in excess of 10 million square feet of shopping centers with value in excess of $1 billion. The principals of Greenstreet Real Estate Partners each have in excess of 20 years in real estate and capital markets. Their biographies can be found in Appendix A.

12.3. Description of the Real Estate Assets

The highly diversified portfolio includes 845 properties in 37 states. The properties are primarily one story wood-framed buildings totaling 5,119,320 sq. ft. Some of the larger state concentrations include Texas, California, Illinois and Virginia. No single state accounts for more than 11% of the total centers (see the Figure below for details on the geographic distribution). The properties are single-tenant stand-alone buildings. The average age of the properties is approximately 15 years with 22% of the portfolio built after 1991 and approximately 6% of the facilities being constructed prior to 1979. The centers' trailing 12 month Utilization was 58.9% as of December 31, 2005.

845 Centers in 37 States



12.4. Summary Financial Information and Projections Discussion

The table below shows KLC PropCo pro forma historical results for 2005 assuming the division of KLC OpCo and KLC PropCo in the series of transactions completed in November 2005 (the "Real Estate Transactions") and related financing, together with the lease of KLC PropCo-owned centers to KLC OpCo, occurred on January 1, 2004. Projected results presented below are based on assumptions management believes to be reasonable, but which are inherently uncertain and may not be realized. KLC PropCo's ability to perform as projected depends on a number of variables that cannot be predicted with certainty and actual performance could be adversely affected by a number of factors, including those described in "Risk Factors," particularly the risk factor related to projected financial statements, elsewhere in this Memorandum. Also see "Forward Looking Statements."

KLC PropCo Summary Historical Pro Forma and Projected Financials

	Fiscal Year Ended December 31,						
($ in millions)	**2005 PF**	**2006P**	**2007P**	**2008P**	**2009P**	**2010P**	**2011P**
Rental Revenue from KLC OpCo	$96.3	$96.3	$96.3	$96.3	$96.3	$96.3	$103.0
Other Rental Revenue[1]	0.0	0.0	4.6	7.0	9.4	12.1	15.0
Total Revenue	**$96.3**	**$96.3**	**$100.9**	**$103.3**	**$105.7**	**$108.4**	**$118.0**
Operating Expenses	8.3	8.3	8.3	8.3	8.3	8.3	8.3
EBITDA	**$88.1**	**$88.1**	**$92.6**	**$95.0**	**$97.4**	**$100.1**	**$109.8**
DEPRECIATION & AMORTIZATION							
Depreciation	$29.8	$27.0	$26.1	$25.0	$23.8	$22.4	$22.4
Depreciation From New Real Estate	0.0	0.0	2.8	4.2	5.7	7.3	9.1
Operating Income	$58.6	$61.1	$63.7	$65.8	$68.0	$70.4	$78.3
INTEREST EXPENSE							
KLC PropCo Debt	$64.3	$64.3	$63.9	$63.5	$63.2	$62.8	$62.5
Deferred Financing Fees	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Total Interest Expense	$66.4	$66.3	$66.0	$65.6	$65.2	$64.9	$64.5
Interest Income	1.1	1.1	0.2	0.2	0.2	0.2	0.2
Net Income	**($7.0)**	**($4.2)**	**($2.0)**	**$0.4**	**$2.9**	**$5.8**	**$14.0**
BALANCE SHEET DATA							
Cash and Equivalents	$24.5	$5.0	$5.0	$5.0	$5.0	$5.0	$5.0
Total Debt[2]	849.4	844.7	839.9	835.3	830.6	826.0	815.8
Net PP&E	687.1	715.6	715.5	715.8	718.6	724.5	740.3
SELECTED CASH FLOW DATA							
Net Income (Loss) to Common	($7.0)	($4.2)	($2.0)	$0.4	$2.9	$5.8	$14.0
+ Depreciation	29.8	27.0	26.1	25.0	23.8	22.4	22.4
+ Real Estate Reinvestment Depreciation	0.0	0.0	2.8	4.2	5.7	7.3	9.1
+ Amortization of Financing Fees	2.1	2.1	2.1	2.1	2.1	2.1	2.1
+ Non-Cash Interest Expense	2.3	2.3	2.3	2.3	2.4	2.4	2.4
+ Change in Working Capital	NA	0.0	0.6	0.3	0.3	0.3	1.2
+ Change in Other Assets Held for Sale	NA	15.8	0.0	0.0	0.0	0.0	0.0
+ Change in Other Assets	NA	0.0	(0.7)	(0.4)	(0.4)	(0.4)	(1.5)
+ Change in Other Liabilities	NA	0.0	4.8	2.5	2.5	2.8	10.1
= Operating Cash Flow	**$27.1**	**$43.0**	**$35.9**	**$36.4**	**$39.3**	**$42.6**	**$59.8**
Cash Reinvested in New Real Estate[1]	$0.0	$55.5	$28.9	$29.4	$32.3	$35.6	$47.2

[1] *Assumes reinvestment of all excess cash above $5.0 million at an 8.25% cap rate.*
[2] *Junior Mezzanine debt is recorded at face value. Book value is approximately $147.3 million.*

Rental Revenue

Management projects rental revenue to increase at a 4.2% CAGR, from $96.3 million (the annual rent payable pursuant to its leases with KLC OpCo) in 2006 to $118.0 million in 2011. The growth stems from KLC PropCo's reinvestment of excess cash flow in additional real estate and rent increases in the properties leased to KLC OpCo as described below:

Intercompany Rent. KLC PropCo currently leases 847 properties (845 childcare centers) to KLC for a total annual rent payment of $96.3 million. The rent on the properties is fixed for the first five years of the lease, at which point it increases by the lesser of the CPI growth over the five years or 7%.

Additional Real Estate. KLC PropCo has projected that it will invest all excess cash (anything over $5.0 million) in additional real estate. The additional real estate may be comprised of either educational or non-educational assets, but will not be leased back to KLC OpCo. KLC PropCo has projected that it will invest its capital at an 8.25% cap rate.

Real Estate Company Operating Expenses

Greenstreet Real Estate Partners will operate all of the real estate investment functions on behalf of KLC PropCo as detailed in the management agreement. See "Related Party Transactions."

12.5. Debt Summary

The table below shows KLC PropCo's outstanding capitalization as of December 31, 2005.

KLC PropCo
Debt Capitalization

($ in millions)	12/31/05
Cash	$ 24.5
CMBS Debt	$699.4
Junior Mezzanine Debt[1]	150.0
Total KLC PropCo Debt	$849.4
Net Debt[2]	$824.9

[1] *Represents face value; book value is approximately $147.3 million.*

[2] *Represents total debt less cash.*

12.6. Terms of the CMBS Debt

KLC PropCo has $699.4 million of CMBS debt which was arranged in connection with the separation from KLC OpCo. KLC PropCo is required to pay interest in cash on a monthly basis at a rate of 5.62% and must meet scheduled amortization requirements on a monthly basis and maturing December 1, 2015.

The CMBS debt consists of a $649.5 million mortgage loan and a $50.0 million senior mezzanine loan secured by 713 childhood education centers. The CMBS debt is nonrecourse KLC OpCo.

Each of the centers securing the mortgage loan is leased to KLC OpCo pursuant to a master lease. KLC PropCo has entered into asset management agreements with Greenstreet Real Estate Partners (formerly Greenstreet Realty Partners, L.P.) pursuant to which Greenstreet Real Estate Partners provides asset management and consulting services for these centers to KLC PropCo. KLC PropCo has the right under certain circumstances to release, substitute, sell and/or reinvest in properties securing the mortgage loan.

Prepayment of the CMBS debt is prohibited through January 1, 2007, after which prepayment is permitted in whole or in part, subject to a prepayment premium equal to the greater of 1% or an amount obtained based on a discount to treasury securities. After June 1, 2015, the CMBS debt may be prepaid in whole without premium or penalty.

The CMBS debt contains provisions that require KLC PropCo to reserve with the lender of the CMBS debt 50% of excess cash flow generated from the CMBS centers if EBITDA (as adjusted) for KLC OpCo falls below certain levels and 100% if EBITDA (as adjusted) for KLC OpCo falls below certain other levels.

12.7. Terms of the Junior Mezzanine Debt

The Junior Mezzanine debt has a face value of $150 million (and was purchased for approximately $147.0 million, reflecting a 2% discount to face value), substantially all of which was provided by the

Principals and their affiliates in connection with the Real Estate Transaction. The Junior Mezzanine debt is subordinated to the new CMBS debt. Cash interest is payable on the Junior Mezzanine debt at a rate of 15.13% and payable in kind at a rate of 1.50%. The Junior Mezzanine debt matures in May of 2016. Interest paid in kind may not be paid in cash until the CMBS debt is paid in full. The Junior Mezzanine debt is nonrecourse to KLC OpCo.

Prepayment of the Junior Mezzanine debt is prohibited through November 9, 2010, after which prepayment is permitted in whole or in part, subject to a prepayment premium equal to 8.32% for prepayments in the first year, 6.66% for prepayments made in the second year, 4.99% for prepayments made in the third year, 3.33% for prepayments made in the fourth year and 1.66% for prepayments made in the fifth year. After November 9, 2015, the CMBS debt may be prepaid in whole without premium or penalty.

12.8. Terms of the Master Lease

As part of the Real Estate Transactions, in November 2005, KLC refinanced its indebtedness and divided KUE into KLC OpCo and KLC PropCo, and KLC OpCo entered into a Master Lease with KLC PropCo for 713 centers. The term of the Master Lease is 15 years and annual rent under the Master Lease is $91 million per year, subject to increases every five years. The Master Lease is a triple net lease that requires KLC OpCo to pay all operational expenses, taxes, utilities, insurance and maintenance costs with respect to the leased centers, and the Master Lease may not be terminated by KLC OpCo. KLC OpCo is required to make certain deposits or to provide letters of credit for taxes, insurance and maintenance of the properties. KLC is also required to deposit rent payments into a segregated deposit account controlled by the CMBS debt lenders. KLC OpCo has the right under certain circumstances to release and substitute properties under the Master Lease. KLC OpCo has entered into separate, substantially smaller leases of KLC PropCo's remaining properties.

13. *k*12 INC. ("*k*12")

*k*12, headquartered in McLean, Virginia, is a curriculum company and management company for kindergarten through ninth grade (grades 10-12 currently in development). *k*12 is the largest operator of K-12 virtual schools in the world. *k*12's mission is to enable delivery of world-class education for students in grades K-12, consisting of comprehensive online and offline curriculum that supports numerous applications. *k*12 has invested more than $70 million in building a state-of-the-art curriculum offering, integrated assessment and the supporting technology delivery systems.

13.1. History

*k*12 was founded in December 1999, with the goal of leveraging technology to create the highest-quality curriculum. *k*12 launched its first offering in September 2001 for students in grades K-2. This offering was launched in conjunction with several of the world's leading education experts and included interactive lessons in Language Arts, Math, Science, History, Art and Music. *k*12 launched grades 3-5 in the fall of 2002, grades 6 and 7 in the fall of 2003, grade 8 in the fall of 2004 and grade 9 in fall of 2005. *k*12 has continually improved its production process and is now producing courses that are of higher quality and at a lower cost per lesson than it originally produced. Building the service in this modular, rolling fashion allows *k*12 to capture students at an early stage and to build out its product offerings in alignment with student progress.

13.2. Current Operations

*k*12 provides a world-class education for its students which combines a comprehensive online and offline curriculum with integrated assessments and supporting technology delivery systems. *k*12 currently provides its education to grades K-9 through more than 7,000 interactive lessons, and is in the process of developing content for grades 10-12. Today, *k*12 sells its curriculum through the following channels:

- Virtual public schools (91% of 2006E Revenue)
  - *k*12 is the largest curriculum and management provider to virtual public schools in the U.S.
  - *k*12 offers its curriculum directly to the rapidly growing virtual school market (projected to be offered to 24,000 students in 2007)
- District-managed virtual programs (3% of 2006E Revenue)
  - *k*12 sells the curriculum and technology directly to school districts who mange their own virtual schools
  - This is a fairly new initiative for *k*12 but is expected to be a larger part of total revenue over time
- School districts for traditional classrooms (3% of 2006E Revenue)
  - *k*12's science curriculum has been piloted as the science curriculum in various school districts including Philadelphia
  - Initial results are promising
- Direct to consumer (3% of 2006E Revenue)
  - To parents who prefer home-schooling or want to augment or enhance their children's public or private school education

*k*12 intends to expand the business to international markets and believes there is a significant worldwide demand for high-quality online curriculum. In the near-term it can do so by serving multinational corporations with large employee bases comprised of expatriates.

*k*12 generated $6 million of revenue in 2002, its first year of operations, growing to more than $116.0 million projected for FYE June 30, 2006.

13.3. Virtual Schools and District-Managed Virtual Programs (94% 2006E Revenue)

The past decade has seen an increase in the number of contracts and charters awarded to Education Management Organizations ("EMOs"), which manage traditional K-12 public schools on behalf of a school district ("contract schools") or manage charter schools either as the charter holder ("charter schools") or under contract with the charter holder ("contract charters"). In the early half of the 1990's, EMOs were mostly contract schools, managing traditional K-12 schools on behalf of school districts. Later, as public money became available to charter schools through the use of vouchers, these organizations moved toward charter school management and contract charter management.

A movement toward alternatives to the public school system is expected to generate substantial growth in the for-profit EMO sector. Alternative schools and alternative management programs provide a significant opportunity to improve the current educational "product." Furthermore, under the NCLB, growth in public school management is expected to continue as schools that fail to achieve "Adequate Yearly Progress" ("AYP") for four consecutive years are subject to one of the following sanctions: replacement of all or most staff including the principal, state takeover of the school, hiring an outside entity to manage the school, or becoming a charter school. *k*12 is well positioned to take advantage of these trends.

To comply with NCLB, all states submitted a plan to the Department of Education indicating baseline achievements for the 2002–03 school year and how 100% "proficiency" would be achieved by 2013–14. The law mandates that student progress and achievement be measured ("assessed") by math and reading tests that will be given to every child, every year, beginning in the 2005–06 school year. In addition, a science assessment will be added beginning with the 2006–07 school year. Under Bush administration proposals, by the 2009–10 school year, students will be tested every year from grades 3 to 11. These assessments are considered intermediate benchmarks that measure a school's ability to demonstrate "Adequate Yearly Progress" (AYP) toward meeting its own goals.

Contract Charters. Charter schools are independent public schools, designed and operated by community groups or non-profit entities, but sponsored by designated local or state educational organizations that monitor their quality and integrity. In return for a large measure of autonomy and freedom from regulation, charter schools are accountable for student academic performance.

The Center for Education Reform estimates that, in the 2004–05 school year, there were 3,345 charter schools serving nearly 894,000 students, representing an estimated 1.6% of total K-12 students. Charter schools now operate in 40 states and the District of Columbia, up from 38 in the 2003–04 school year. In the 2004–05 school year, enrollment in charter schools represented 1.6% of total K-12 enrollment and annual spending on charter schools was $7 million or 1.4% of total spending on all K-12 schools. However, in the decade of 1995–2005 the number of charter schools had grown on average nearly 13% annually while charter school enrollment increased over 20%, clearly outpacing the less than 1% average K-12 enrollment growth over the same period.[37]

*k*12 participates in the charter school business by setting up virtual public schools that it manages through a partnership with a non-profit entity. After going through the legislative process at the local or state level and obtaining a charter for a school, *k*12 sets up a non-profit organization with a principal and the right administrative team to create the school. *k*12 then enters into a contract with the non-profit organization whereby *k*12 sets up and manages the "virtual public" school. *k*12 offers an Internet-based curriculum (providing the computer hardware and all necessary materials) outside of the conventional brick-and-mortar setting of traditional public and charter schools. Where legislation has enabled such schools, state education dollars pay for children who enroll in them. Virtual schools generally generate substantially larger profits than conventional for-profit charter schools because they receive the same amount of per-student funding as their traditional public school counterparts despite not having to support a physical structure. Virtual schools enable students to receive a comprehensive curriculum along with technical assistance, teacher involvement, computer equipment, Internet access, and instructional materials, without leaving the public education system. Virtual academies are serving a diverse mix of students. With the same curriculum, *k*12 is serving both highly gifted children and children with disabilities. The self-paced nature of *k*12's curriculum and its interactivity allow *k*12 to serve a broad array of students. *k*12's students, currently in virtual schools, come from public or private schooling backgrounds, as well as home schooling backgrounds. A summary of *k*12's virtual school business is as follows:

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[37] *Source: Harris Nesbitt, Education and Training, September 2005.*

- *k*12 manages virtual schools for students in grades K-9 in 11 states (Arizona, Arkansas, California, Colorado, Florida, Idaho, Minnesota, Ohio, Pennsylvania, Texas and Wisconsin) plus the District of Columbia. In the 2006 fiscal year, these schools had a combined enrollment of approximately 18,000 children.

- *k*12 managed schools typically produce test score results which exceed or are equal to state averages at a cost to the taxpayer that is approximately 70% less than what they would pay for traditional school.

- Virtual schools are funded primarily through local, state, and federal sources, which *k*12 expects to receive approximately $5,300 per student per school year on average. Therefore, the virtual schools provide access to *k*12's world-class service and curriculum as well as certified teachers at no cost to the family.

- While many of *k*12's virtual academies are charter schools, *k*12 has virtual schools that are not charter schools but are programs of school districts or other authorized school agencies, such as public universities and federal and state agencies.

District-Managed Schools. *k*12's district-managed virtual programs operate under the contract schools model. Although somewhat similar to the virtual public schools, contract schools are public schools operated by private organizations based on management agreements with local school boards. Unlike charter schools, contract schools do not require specific statutory authority but are created through a contract between a school management company and a school board in accordance with existing authority. *k*12 typically employs the district-managed virtual programs in states where the reimbursement rate is low. Two states where *k*12 currently has district-managed virtual programs are Kansas and Utah. The district-managed virtual programs unit is expected to grow revenue from $3 million in FY 2006 to $11 million in FY 2008.

The Pennsylvania Department of Education commissioned KPMG Consulting to study virtual education in that state. The October 2001 study stated that the Pennsylvania Virtual Charter School (which uses the *k*12 curriculum and management services) "was considered to be the highest quality program based on the curriculum analysis." *k*12 believes that the virtual school market has powerful growth prospects which are outlined below:

- **Strong reenrollment rates.** *k*12 benefits from stable demand for its curriculum and services which is reflected by current reenrollment rates of approximately 70%.

- **Increasing existing school enrollment rates.** Existing school enrollments continue to increase at double digit rates.

- **Expansion into new states.** *k*12 is currently evaluating opportunities to start new virtual schools in several additional states.

- **Grade expansion.** *k*12 continues to expand its curriculum and services and plans to begin development of grades 10-12 in the fall of 2006.

- **ADA funding.** The level of funding generally increases at approximately 2% per year.

With four times the number of students of its next competitor, *k*12 is the largest for-profit manager of virtual schools.

Virtual Schools Managed by For-Profit Educational Management Companies

Company	Location	Public Schools under Management	Number of which are Virtual Schools	Students in Virtual Schools
*k*12	McLean, VA	15	15	14,460
White Hat Management	Akron, OH	38	2	3,508
Connections Academy	Baltimore, MD	10	10	1,081
Pinnacle Education	Tempe, AZ	9	1	212
Sequoia Charter Schools	Mesa, AZ	11	1	160
Designs for Learning	St. Paul, MN	10	1	50

Note: Schools ranked by students in 2004–05 school-year.
Source: Harris Nesbitt based on information compiled by Education Policy Studies Research Unit at Arizona State University.

13.4. Curriculum to School Districts of Traditional Classrooms (3% 2006E Revenue)

*k*12 piloted its core elementary school science program for several school districts, including Philadelphia. The initial results of this pilot program were promising.

Case Study: William H. Hunter Elementary School

Background. In the Spring of 2004 the School District of Philadelphia wished to give a rebirth to one of its lowest performing schools, the William H. Hunter Elementary School. *k*12 was selected as a partner to provide innovative curriculum and professional development to implement a learning environment that leverages the latest technology. As part of the *k*12 implementation, the District outfitted each room with high-speed internet access, a ceiling-mounted data projection system, and interactive whiteboards. The goal was to have Hunter become one of the District's, and the Commonwealth of Pennsylvania's, first web-based public, traditional schools.

Of Hunter's 600 students, 95% qualify for the federal Free and Reduced Lunch program and 25% study English as a Second Language (ESL). Therefore, the move and the District's initiative truly marked a tremendous opportunity for both Hunter's teachers and students alike.

Scope of Services. The fall of 2004 marked the official launch of the program and the *k*12 curriculum was provided for all math, science, art and history courses. This included providing all curriculum components including text books, teacher guides, manipulatives, equipment, assessments, art supplies and all the online lessons and teaching tools for these subjects.

The Hunter teaching staff did an impressive job of effectively implementing the program. *k*12 trainers worked closely with teachers to adopt the new curriculum and to share best methods on applying the technology. Throughout the year, *k*12 trainers were invited to attend and help present ongoing staff trainings. Additionally, grade level teams and school leaders worked regularly with *k*12 to develop coherent plans for boosting student achievement.

Results / Conclusions: After the first full-year of implementing the *k*12 program, Hunter achieved impressive gains on the state math exams.[38] In third grade, there was a 46 percentage point increase (as compared to a 31 point increase for the District). This was a meaningful 86% performing at or above proficient compared to the District's 52% for 2005. In fifth grade, there was 22 percentage point gain (as compared to a 15 point gain for the District).

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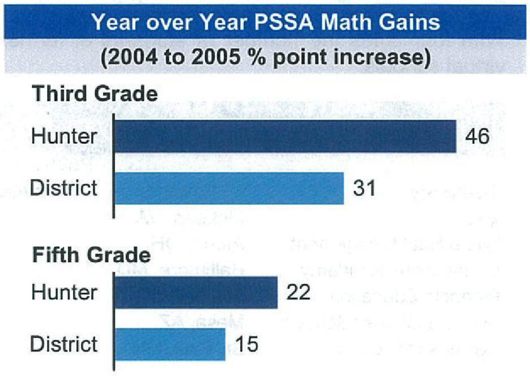
[38] *The Pennsylvania Department of Education mandates all public schools in the Commonwealth implement its Pennsylvania System of State Assessment (PSSA). The PSSA is a standards-based exam for measuring specific skills in math and reading, and beginning in 2006–07 science.*

As a result of these scores, the 3rd and 5th grade students met or exceeded the absolute AYP goals for math instruction - a first for the school. (Note: *k*12 did not supply the Reading curriculum, therefore, only Math results are applicable to the *k*12 program).

These gains are an extraordinary achievement for a school and its district. They are also difficult to maintain over time, however this goal is shared between the District and *k*12. The Hunter School accomplished these gains through the staff's hard work, commitment to their students and dedication to implementing the *k*12 program.


Year over Year PSSA Math Gains
(2004 to 2005 % point increase)

New programs often take two to three years to generate similar results. While *k*12 and the Hunter staff are pleased with the first year's results, it is only the beginning of a longer effort because, despite the gains, more than half of last year's fifth graders still did not score at or above their grade level. Therefore, although there is pride in the progress, the overall scores demonstrate how much more is to be done.

13.5. Direct to Consumer (3% of 2006E Revenue)

*k*12 sells its curriculum direct to consumers who either home school their children or use *k*12's curriculum to supplement their child's education. *k*12 believes that it offers children and their parents an education comparable to that offered in the nation's best public and private schools, utilizing optimal multimedia methods and research-tested approaches to learning. In addition, integrated assessments allow a parent to test his or her child's mastery of skills and enables the child to progress at the appropriate pace. Children can move faster through lessons and address more challenging problems, while other children can spend the additional time needed to master certain skills. With *k*12's high standards and integrated assessments, a parent can be confident that his or her child has mastered the subject. *k*12 considers this market a growth area.

Educating a child at home full time or part time is a time-consuming and daunting task for parents. Parents and caregivers spend a considerable amount of time searching for curriculum and trying to ensure they are teaching the material adequately to their children. *k*12 offers a solution to this challenge by offering a comprehensive curriculum for students in grades K-9, complete with specific daily lessons. Parents can purchase individual or multiple courses. Although small, the home-schooling market is growing at a healthy pace. Approximately 1.1 million students—roughly 2% of total K-12 enrollment—were home-schooled in spring 2003, according to the National Center for Education Statistics (NCES). This represents a roughly 30% increase from spring 1999. Most home school parents cited concerns about the school environment (31%), interest in providing religious instruction (30%) and overall dissatisfaction with academic instruction (16%) as their reasons for home schooling their children.[39]

The exam is also used in assessing performance toward No Child Left Behind guidelines for grades 3, 5, 9 and 11. The goal of the exam is for students to score at or above proficient levels. Student results are also used to determine a school and district's performance in meeting pre-determined goals known as Adequate Yearly Progress (AYP).

[39] *Source: Harris Nesbitt, Education and Training, September 2005.*

13.6. Product Offering

Comprehensive K-9 Curriculum. *k*12 offers a comprehensive curriculum for grades K-9 directly to the students in its virtual academies, directly to consumers and to school districts, summer schools and after-school programs. *k*12 is creating rich and challenging proprietary educational material based on existing best-of-breed content and traditional methods enhanced by technology. Unlike most computer-based education programs, which rely solely on computers and burden students with mechanical "point and click" exercises, *k*12 uses the computer as only one among many complementary tools to open children's minds to the best books and educational material. *k*12's math, reading and writing curriculum involve a significant amount of off-line work in the form of books, audiotapes, science equipment, art supplies and more. *k*12 provides some of these materials and others will be recommended but not required.

For example, *k*12's comprehensive curriculum for students in grades K-9 includes lessons in the following subjects:

- *Language Arts.* Progresses from a focus in the primary grades on early mastery of reading using phonics-based curriculum reviewed and revised by a team of renowned experts, to, in later grades, a rich program of literature, composition, and language skills;
- *Math.* A solid early foundation in basic math based on a highly respected math curriculum and rigorous math standards;
- *History.* In grades K-4, a proprietary *k*12 program that offers a chronological overview of history, from the Stone Age to the Space Age, with integrated geography and civics; in middle school, an American History survey based on the celebrated History of the US series, and a World History survey based on a proprietary *k*12 textbook;
- *Science.* A world-class science curriculum focused on hand-on activities and basic principles driven by some of the most ambitious state science standards in the country;
- *Visual Arts.* A curriculum that combines appreciation of historical trends and masterpieces with specific skill building and many opportunities for creative work; and
- *Music.* In the elementary grades, a proprietary program that engages young children in singing, dancing and creative movement while introducing them to great works of music from around the world.

*k*12's curriculum and assessment are delivered, in part, through a series of proprietary course modules. *k*12 delivers material over the Internet, but also through other forms of media, including traditional books, video and learning kits. *k*12's course modules employ interactive text, audio, videos, CDs, and animated graphics. The Internet-based portion of *k*12's courses contains the following features:

- Integration of a diverse mix of materials—visual images and concepts, audio, videos and animated sequences, as well as high-quality written material;
- Capabilities for users to see an overview of the whole module at a glance;
- Opportunity for parents to scan and preview modules before guiding students through work;
- Integrated assessment services;
- Ability for children, parents, and teachers to follow students' progress;
- Comprehensive teaching guides with "drill down" functionality for those parents requiring more detailed instruction; and
- Proven, standards-based, technologies that provide a satisfactory experience for the current Internet infrastructure.

*k*12 considers the majority of its entire curriculum proprietary, whether *k*12 is branding existing materials with its logo and modifying the associated lesson plans or creating the entire course from scratch. *k*12's K-8 curriculum includes thousands of lessons that consist primarily of existing, high-quality materials that *k*12 has modified to better suit the needs of student, parent and teacher.

13.7. Management and Board of Directors

The following table sets forth certain information regarding *k*12's management and directors. For more detailed biographical information, see Appendix A.

Management	
Name	**Position**
Ron Packard	Chairman and Founder / acting Chief Executive Officer and member of the Board of Directors
John Baule	Executive Vice President and Chief Financial Officer
Bror Saxberg	Senior Vice President of Learning and Content
Thomas Boysen	Senior Vice President and Chief School Officer
Charles Zogby	Senior Vice President of Education Policy
Peter Stewart	Vice President of the Charter School Division
Bryan Flood	Vice President of Government Relations
John Holdren	Senior Vice President of Curriculum

Non-Employee Directors	
Name	**Position**
Arthur Bilger	Managing Member of Shelter Capital Partners
Steven B. Fink	Chief Executive Officer of Lawrence Investments, LLC
Chester Finn	President of the Thomas B. Fordham Foundation
Lowell J. Milken	President and Chief Executive Officer of KUE
Andrew H. Tisch	Chairman of Executive Committee of Loews Corporation
Thomas Wilford	Chief Executive Officer of the J.A. and Kathryn Albertson Foundation, Inc.
Liza Boyd	Vice President Constellation Ventures / Bear Stearns Asset Management

13.8. Summary Financial Information and Projections Discussion

The following summary historical financial data and the percentages of expected 2006 revenue presented in the headings above are based on historical financial statements. The following projected financial data presented below is based on assumptions management believes to be reasonable, but which are inherently uncertain and may not be realized. *k*12's ability to perform as projected depends on a number of variables that cannot be predicted with certainty and actual performance could be adversely affected by a number of factors, including those described in "Risk Factors," particularly the risk factor related to projections elsewhere in this Memorandum. Also see "Forward-Looking Statements."

*k*12 Summary Historical and Projected Financial Information						
	Fiscal Year Ended June 30,					
($ in millions)	**2002**	**2003**	**2004**	**2005**	**2006P**	**2007P**
Revenue	$6.7	$30.9	$71.4	$85.3	$116.0	$132.2
Growth		*362.1%*	*131.0%*	*19.5%*	*36.0%*	*14.0%*
Operating Income	($30.4)	($28.0)	($6.9)	($3.3)	$2.0	$6.4
Operating Income Margin	*(454.3)%*	*(90.4)%*	*(9.7)%*	*(3.8)%*	*1.7%*	*4.8%*
EBITDA	($28.6)	($25.1)	($2.0)	$2.2	$5.7	$12.3
EBITDA Margin	*(427.9)%*	*(81.1)%*	*(2.8)%*	*2.6%*	*4.9%*	*9.3%*
Net Income	($30.4)	($28.4)	($7.4)	($3.5)	$1.3	$5.2
Net Margin	*(454.5)%*	*(91.7)%*	*(10.4)%*	*(4.1)%*	*1.1%*	*3.9%*

Historically, the majority of *k*12's revenue has been from virtual schools and district-managed virtual programs. Traditionally, *k*12's revenue growth has been driven by three major factors; (i) the addition of grades, (ii) the addition of states and (iii) same-store growth in existing states.

In 2002 *k*12 began operations in two states (Colorado and Pennsylvania). In 2003 revenue grew to $30.9 million from $6.7 million during the 2002 fiscal year end. Growth was due to the addition of four new states (Ohio, Idaho, California and Arkansas), three new grades and same store sales growth of approximately 40%. During 2004 revenue increased by 131.0% to $71.4 million. Revenue growth during the 2004 fiscal year was due to the addition of five new states (Minnesota, Arizona, Florida, Wisconsin and the District of Columbia) and two new grades. During the 2005 fiscal year *k*12 began to concentrate on leveraging its scale to achieve profitability by slowing down curriculum production and not aggressively pursuing new states. Revenue grew at a slower rate, but profitability increased as the growth in the existing states continued. Existing state growth is more profitable than new state growth because each new state requires a significant amount of fixed overhead to be added.

The projections of financial results presented above are based on the development and expansion of *k*12's operations in existing states and grades. Key growth drivers in the near term are expected to include high same-store growth rates and *k*12's ability to leverage its existing infrastructure for margin improvement. Future drivers of growth at *k*12 which are not included in the projections are expected to include the addition of new states. In 2006, *k*12 opened in Texas, Wyoming and Washington. More recently, the Chicago school board approved a virtual public school for the city of Chicago that will be managed by *k*12. *k*12 also received a charter in the Sacramento area of California that will allow it to serve a large area in California that it cannot currently serve. *k*12 is currently continuing to pursue opportunities in several other states.

Under *k*12's current revenue recognition policy, revenues are principally earned from contractual agreements to provide on-line curriculum, books, materials, computers and to manage and operate virtual charter schools. In most contracts, *k*12 is responsible to the charter schools for all aspects of the management of schools, including but not limited to the monitoring of the academic achievement of the students, training, and compensation of school personnel; and procurement of curriculum and equipment necessary for operations of the schools. The schools receive funding on a per student basis from the state in which the charter school or school district is located. Where *k*12 has determined that they are the primary obligor for substantially all expenses under these contracts, *k*12 records the associated per student revenue received by the school from its state funding school district up to the expenses incurred in accordance with Emerging Issues Task Force (EITF) 99-19, Reporting Revenue Gross as a Principal Versus Net as an Agent. *k*12 has generally agreed to fund any operating losses of the schools in a given school year; however, *k*12 is not entitled to any revenue in excess of expenses incurred on its contracts, unless *k*12 incurred excess losses in prior years. For contracts in which *k*12 is not the primary obligor, *k*12 records revenue based on its net fees earned per the contractual agreement.

Under *k*12's current revenue recognition policy, *k*12 records revenue related to contracts with its virtual academies primarily on a gross basis. As a result, *k*12 has recorded certain expenses of these virtual academies in revenues and costs and expenses. These expenses were $25.4 million and $29.3 million for the fiscal years ended June 30, 2004 and 2005 respectively.

13.9. *k*12 Equity

*k*12 has issued and outstanding approximately 45.1 million shares of Series C Preferred Stock, approximately 51.5 million shares of Series B Preferred Stock and approximately 10.0 million shares of Common Stock. The Series C Preferred Stock is senior to the Series B Preferred Stock and the Common Stock and has a liquidation preference equal to the greater of (a) two times the original cost of the Series C Preferred Stock (plus any accrued dividends) or (b) the amount which would be received upon conversion of the Series C Preferred Stock into Common Stock. KUE owns approximately 40.0% of the outstanding Series C Preferred Stock. The Series C Preferred Stock has a dividend rate of 10% per annum, compounded annually with such dividends being paid in the form of additional shares of Series C Preferred Stock.

The Series B Preferred Stock is senior to the Common Stock and has a liquidation preference equal to the greater of (a) two times the original cost of the Series B Preferred Stock or (b) the amount which would be received upon conversion of the Series B Preferred Stock into Common Stock. KUE owns approximately 7.5% of the outstanding Series B Preferred Stock. The holders of the Series B Preferred Stock do not receive dividends.

KUE does not own any shares of Common Stock. However, both the Series B Preferred Stock and the Series C Preferred Stock are convertible into *k*12 Common Stock, and on an as-if-converted, fully-diluted basis KUE owns approximately 17.9% of *k*12's Common Stock.

14. THE STRUCTURE OF KUE AND THE GENERAL PARTNER

The following information is a summary of the principal terms of the organizational documents of KUE and the General Partner. The information below is qualified in its entirety by reference to the Amended and Restated Limited Partnership Agreement of KUE and the organizational documents of the General Partner, including the Amended and Restated Memorandum and Articles of Association of the General Partner and the Agreement Among Members of the General Partner (the "Organizational Documents"), copies of which have been provided or are available upon request. In the event of any inconsistency between the terms herein and the terms of the Organizational Documents, the Organizational Documents shall control.

14.1. KUE

KUE is constituted as a Cayman Islands exempted limited partnership under the Exempted Limited Partnership Law (2003 Revision) (the "ELP Law"). A Cayman Islands exempted limited partnership is constituted by the signing of the relevant partnership agreement and its registration with the Registrar of Exempted Limited Partnerships in the Cayman Islands.

Notwithstanding registration, an exempted limited partnership is not a separate legal person distinct from its partners. Under Cayman Islands law, any property of the exempted limited partnership shall be held or deemed to be held by the general partner, and if more than one then by the general partners jointly upon trust, as an asset of the partnership in accordance with the terms of the partnership agreement. Similarly, the general partner for and on behalf of the partnership incurs the debts or obligations of the exempted limited partnership. Registration under the ELP Law entails that the partnership becomes subject to, and the limited partners therein are afforded the limited liability and other benefits of the ELP Law.

The business of an exempted limited partnership will be conducted by its general partner(s) who will be liable for all debts and obligations of the exempted limited partnership to the extent the partnership has insufficient assets. As a general matter, a limited partner of an exempted limited partnership will not be liable for the debts and obligations of the exempted limited partnership save (i) as expressed in the partnership agreement, (ii) if such limited partner becomes involved in the conduct of the partnership's business or (iii) if such limited partner is obliged pursuant to Section 14(1) of the ELP Law to return a distribution made to it where the exempted limited partnership is insolvent.

The Limited Partnership Agreement of KUE limits the liability and reduces the fiduciary duties of the General Partner to the Limited Partners of KUE (the "Limited Partners," and, together with the General Partner, the "Partners") to the full extent of applicable law. The Limited Partnership Agreement also restricts the remedies available to the Limited Partners for actions that might otherwise constitute a breach of the General Partner's fiduciary duties owed to the Limited Partners. By purchasing Units, Investors are treated as having consented to various actions contemplated in the Limited Partnership Agreement and conflicts of interest that might otherwise be considered a breach of fiduciary or other duties under applicable Cayman law.

14.2. The General Partner

The General Partner is incorporated in the Cayman Islands as an exempted company with limited liability under the Companies Law (2004 Revision) (the "Companies Law"). The Memorandum and Articles of Association comprise the constitution of General Partner. The principal business purpose of the General Partner is to act as the general partner of KUE, to own interests in KUE and to engage in activities related thereto (the "Business Purpose"). The General Partner will not engage in material activities (including holding any material assets or incurring any material liabilities) unrelated to the Business Purpose. The General Partner has no prior operating history or prior business and will not have any substantial assets or liabilities other than in connection with its acting as general partner of KUE and as described in this Memorandum.

The day to day business of the General Partner will be generally be conducted by its directors, although certain matters require the approval of its shareholders pursuant to the Companies Law and the General Partner's Articles of Association. Under Cayman Islands law, a director of a Cayman Islands company is obliged to comply with a number of duties, breach of which may, in certain circumstances, result in personal liability on the part of the director. However, provided a director complies with the fiduciary duties and the requisite duties of care, diligence and skill, the fact that a decision turns out to be wrong, not beneficial, or causes loss, will not of itself necessarily establish personal liability.

As a general rule, in the absence of a contractual arrangement to the contrary, the liability of a shareholder of a Cayman Islands exempted company which has been incorporated with limited liability is limited to the amount from time to time unpaid in respect of the par value of, together with the share premium payable on, the shares he holds; the company having a separate legal personality from that of its shareholders, and being separately liable for its own debts due to third parties. However, although there is no decided Cayman Islands authority on the issue, English common law authority (which would be regarded as persuasive, though technically not binding, in the courts of the Cayman Islands), supports the proposition that it in exceptional circumstances it is conceivable that the principle of the separate legal personality of a company could be ignored and the court will "pierce the corporate veil." Examples might be a company acting as the agent or nominee of its shareholder, incorporation for an illegal or improper purpose, using a company or group of companies as a means of perpetrating a fraud, or using the separate personality of a company to circumvent a pre-existing obligation of its proprietor.

14.3. Classes of Units; Capital Contributions

Assuming that 1,000,000 Units are sold to Investors by March 31, 2007, and that the accrued dividends on the preferred limited partner units are paid in cash, approximately 2,530,000 Units will be outstanding. The Investors will own approximately 40% of KUE in the form of Common LP Units and approximately 40% of the General Partner in the form of Class A Shares.

The General Partner will be the sole general partner of KUE and will hold approximately 1,000 General Partner Units ("GP Units") in KUE, representing approximately 0.04% ownership in KUE.

The economic interest in KUE represented by the Common LP Units and the GP Units will be reduced by the Profits Participation LP Units as described below under "Distributions."

Assuming that 1,000,000 Units are sold to Investors by March 31, 2007, and that the accrued dividends on the preferred limited partner units are paid in cash, KUE LLC, controlled by the Principals, will hold approximately 1,530,000 Common LP Units representing approximately 60% ownership in KUE and 1,530,000 Class A Shares. The Common LP Units owned by KUE LLC will not be transferable, except (i) to the Principals; (ii) to affiliates of the Principals and/or (iii) to family members and/or charitable organizations in connection with the Principals' estate planning, unless combined with the corresponding percentage of Class A Shares to form Units and transferred in the form of Units in accordance with the Limited Partnership Agreement.

Knowledge Universe Holdings LLC, a Delaware limited liability company ("KUH LLC") controlled by the Principals, will hold 900 Class B ordinary shares of the General Partner (the "Class B Shares"). The Class B Shares held by the Principals and their affiliates will not be transferable, except to (i) the Principals; (ii) to the affiliates of the Principals; and/or (iii) to family members and/or charitable organizations in connection with the Principals' estate planning. The Class B Shares will automatically convert to Class A Shares if the Principals' aggregate direct and indirect economic interest in KUE is less than 15% of the outstanding Partnership Units (as defined below) of KUE.

A limited liability company ("KULG LLC-1"), of which Knowledge Universe Learning Group LLC, a Delaware limited liability company that is controlled by the Principals ("KULG"), and certain other persons designated by KULG are members, will be the holder of the Profits Participation LP Units (the "Profits Participation Limited Partner") with the economic rights as set forth in "– Distributions" below. KULG LLC-1 will undertake that no more than 9% of the KUE Partnership Interests outstanding immediately after the final closing of the offering or thereafter will be held directly or indirectly by or for the account of the Principals and their Affiliates through the Profits Participation LP Units of KUE. At least 2/11ths of the Profits Participation LP Units outstanding will be issued to or reserved for the benefit of members of KULG LLC-1 that are not the Principals or their affiliates, and may include employees, officers, directors, consultants and agents of KUE, its subsidiaries and joint ventures as designated by KULG. At each closing of any sale of Units to Investors where the aggregate purchase price of all Units acquired by Investors to date is less than or equal to $1.5 billion (during the Offering Period or thereafter), the Profits Participation Limited Partner will be issued a number of Profits Participation LP Units such that the aggregate shall equal at least 9/11ths of the 11% of "Partnership Units" (Common LP Units, GP Units, and Profits Participation LP Units) that may be represented by Profits Participation LP Units. Additional Profits Participation LP Units will be issued to the Profits Participation Limited Partner, at such time and in such numbers as the Profits Participation Limited Partner will direct, based upon the issuance by the Profit Participation Limited Partner of interests to members of the Profits Participation Limited Partner (who may include employees, officers, directors, consultants and agents of KUE, its subsidiaries and joint ventures as designated by KULG other than the Principals and their affiliates), the vesting schedule of such interests, and whether certain tax elections are made by the recipients of such interests; provided, however, the total number of Profits Participation LP Units shall not exceed a number equal to eleven percent (11%) of the aggregate number of Partnership Units. Any increase in the number of Profits Participation LP Units following the sale of the first $1.5 billion of Common LP Units to Investors requires a majority vote of the Independent Committee.

Subsequent to the completion of this offering, KUE may raise additional capital through the sale of equity or debt securities. KUE will not have any preferred limited partner units outstanding upon completion of this offering but KUE may issue limited partner units with preferences over the Common LP Units in the future and may amend the Limited Partnership Agreement accordingly.

Since the General Partner will have a nominal economic interest in KUE, the Class A Shares are expected to have nominal economic value. The Class A Shares are, however, intended to provide Unit holders with certain voting and other governance rights in the General Partner (as described further below) which, in turn, will control KUE.

14.4. Admission of Partners to KUE

The General Partner may admit one or more Persons as additional Partners of KUE on such terms as the General Partner will determine. Upon the admission of additional Partners, the capital accounts of the Partners will be increased or decreased, as the case may be, to reflect the gross asset values of KUE's assets pursuant to Regulation Section 1.704-1(b)(2)(iv)(g). The amount of any such increase or decrease will be allocated among the Partners who were Partners immediately prior to the admission of additional Partners as if such increase or decrease constituted income or loss, respectively, in accordance with the allocation provisions of the Limited Partnership Agreement.

Not in limitation of the foregoing, Investors admitted during the Offering Period after the first closing of this offering and after September 30, 2006 will pay an additional amount accruing at a rate of 0.67% per month calculated from the first closing date of the offering (pro-rated for partial periods) for each Common LP Units purchased, which will be distributed promptly to the holders of Common LP Units outstanding prior to such admission in proportion to the number of Common LP Units held by such holders.

14.5. Management of KUE and the General Partner; Voting Rights

The General Partner will manage and operate KUE. Investors will have no voting rights on matters affecting KUE business with respect to their Common LP Units in KUE because the Investors will be limited partners of KUE. Notwithstanding the foregoing, subject to certain exceptions set forth in the paragraph below, KUE must obtain the consent of (a) the holders of a majority of the Common LP Units unaffiliated with the Principals to amend the Limited Partnership Agreement in a manner that is adverse to the Common LP Unit holders and (b) the holders of at least 90% of the Common LP Units unaffiliated with the Principals to amend the "Equal Merger Consideration Provision" described herein. In addition, the General Partner may not take any action to (a) alter or add to its Articles or (b) alter or add to its Memorandum with respect to any objects, powers or other matters specified therein that would adversely affect the rights of holders of Class A Shares without the affirmative vote of the holders of a majority of the Class A Shares.

Notwithstanding the foregoing, the General Partner, acting reasonably and in good faith, may amend the Limited Partnership Agreement without the consent of any Limited Partner (a) to correct any typographical or similar ministerial errors; (b) to delete or add any provision required to be so deleted or added by applicable law or any government official having jurisdiction over KUE; (c) to cure any mistake or ambiguity, to correct or supplement any provision herein which may be inconsistent with any other provision herein; (d) to take such actions as may be necessary (if any) to ensure that KUE will be treated as a partnership for U.S. federal income tax purposes; (e) to reflect the admission of any additional Limited Partner and otherwise to reflect such admission or an additional investment by a Limited Partner on the books and records of KUE pursuant to the General Partner's power of attorney; (f) to take such actions as may be necessary (if any) to ensure that neither of KUE or the General Partner (or any subsidiary of the foregoing) will be subject to regulation under ERISA or the Investment Company Act; (g) to take such actions as may be necessary (if any) to ensure that the General Partner (or any Subsidiary) will not be subject to the Investment Advisers Act; (h) to reflect any increase in the number of Profits Participation LP Units approved by the Independent Committee and related changes in allocation and distribution provision; (i) to make changes negotiated with Limited Partners admitted in any subsequent closing of the offering, so long as such changes do not, in the good faith determination of the General Partner and with the approval of the Independent Committee, adversely affect the rights, obligations and economic interests of the existing Limited Partners; and (j) to the extent necessary to give effect to partnership interests issued to additional Limited Partners after the Offering Period. The General Partner shall provide prompt written notice of any such amendments to the Limited Partners.

Holders of Class A Shares of the General Partner will have one vote per share. The holders of Class B Shares will have, in the aggregate, one more vote than the requisite legal vote required to approve particular matters. In addition, Investors will have the right to elect directors to the Board of Directors of the General Partner as set forth in "– Board of Directors of the General Partner" below.

14.6. Board of Directors of the General Partner

The General Partner will have a Board of Directors initially consisting of up to 13 persons.

Following the first closing of the offering and prior to the "Initial Listing" (as defined below), the outside Investor (including its affiliates) holding the greatest number of shares in the General Partner at the first closing of the offering will appoint two directors of the General Partner and the holders of the Class B Shares will appoint the remaining Directors.

Following the initial appointment of the Board, the Board may, in its sole discretion, increase the number of directors, including to accommodate investors that invest subsequent to the initial closing of the offering of the Units, provided that the outside Investor appointing two directors pursuant to the paragraph above shall have the right to appoint additional directors as required to maintain a ratio of such Investor's designees to total Board members of not less than 2/15ths.

"Independent Directors" of the Board of Directors of the General Partner shall be individuals who (a) are not (i) a Principal, (ii) a family member of a Principal, (iii) an employee of a Principal or any entity controlled by one or more of the Principals, and (b) meet the definition of "independent director" set forth in Rule 303A.02 of the New York Stock Exchange Listed Company Manual (as if the General Partner, KUE and each of its Subsidiaries were the "listed company") , including any such individuals appointed by the Investors who otherwise satisfy the requirements of this definition.

At the time of the final closing of this offering, the General Partner will have at least two Independent Directors. After the Initial Listing and so long as consistent with contractual, listing and licensing obligations, a majority of the board of directors of the listed company will be Independent Directors.

14.7. Initial Listing; Initial Listing Process

"Initial Listing" means a listing on a recognized international securities exchange with a substantially concurrent underwritten offering generating gross proceeds of U.S. $200 million or more. "Initial Listing" refers to the Initial Listing of KUE or any successor or any subsidiary of KUE to which substantially all of KUE's assets and liabilities have been transferred or are held.

The General Partner may take and cause KUE to take such actions as the General Partner reasonably deems necessary to complete the Initial Listing on the recognized international securities exchange or exchanges selected by the General Partner, including without limitation a restructuring or reorganization or other transaction or asset transfer between or among KUE and any of its subsidiaries. If the Initial Listing involves the listing of shares or other interests of a subsidiary of KUE, in the General Partner's discretion, KUE may (i) retain some or all of KUE's interest in such subsidiary not sold in connection with the Initial Listing, (ii) distribute some or all of KUE's interest in such subsidiary not sold in connection with the Initial Listing to the Partners, (iii) offer Partners the opportunity to exchange their Common LP Units and shares of the General Partner for interests in such subsidiary, (iv) require Partners to exchange their Common LP Units and shares of the General Partner for interests in such subsidiary, or (v) any combination of the foregoing. Each Partner shall cooperate with the General Partner in connection with the foregoing, including, without limitation, (i) by providing any necessary approvals from such Partner for (a) any merger or consolidation of KUE or a subsidiary then permitted by law into an entity that is eligible to effect such Initial Listing and has no other material business, assets or liabilities, or (b) a transfer of all, substantially all or a portion of the assets and liabilities of KUE to one or more wholly-owned subsidiaries eligible to effect the Initial Listing; (ii) by exchanging such Partner's Common LP Units and shares of the General Partner for shares or other interests of the entity to be listed; (iii) by agreeing to customary "lock-up" (on terms no more restrictive than KUE LLC or its affiliates or any other Common Limited Partner which provides a "lock-up") and other agreements with underwriters; and (iv) by taking such other actions as may be reasonably requested by the General Partner, provided that, in connection with such Initial Listing, no Partner shall be required to contribute additional capital to KUE or the entity effecting the Initial Listing. The economic interests of the Profits Participation Limited Partner shall not be reduced as a result of any actions taken to effect the Initial Listing.

14.8. Mandatory Conversion of Class B Ordinary Shares

The Class B Shares will automatically convert to Class A Shares if the Principals' aggregate economic interest in KUE is less than 15% of the outstanding Partnership Units.

14.9. Distributions

Cash and other property may be distributed from KUE after payment of ordinary expenses and all amounts currently due on KUE indebtedness, funding capital expenditures of subsidiaries and joint venture, funding operating and other expenses of KUE, its subsidiaries and joint ventures and after the establishment of reasonably necessary reserves as determined by the General Partner. The General Partner will make distributions at such times as determined by the General Partner.

Distributions will be made in the following priority:

- First, to the Common Limited Partners and the General Partner in proportion to and to the extent of their unreturned capital contributions, but in no case may a distribution pursuant to this bullet exceed a Partner's positive adjusted capital account balance;

- Second, pursuant to Subsections (a) and (b) in proportion as follows: (a) to the Common Limited Partners and the General Partner in proportion to and to the extent of their undistributed Preferred Returns; and (b) to the Profits Participation Limited Partner in an amount equal to (i) the number of Units held by the Profits Participation Limited Partner, divided by the number of all outstanding Units other than Units held by the Profits Participation Limited Partner, multiplied by (ii) the amount distributed pursuant to Subsection (a) of this bullet, multiplied by (iii) a fraction to be provided by the Profits Participation Limited Partner; provided, however, that the fraction shall not exceed 2/11ths (unless the Independent Committee has increased the number of Profits Participation LP Units beyond the number initially authorized, in which case the maximum fraction authorized for this purpose would be increased appropriately);

- Third, to the Profits Participation Limited Partner in an amount equal to: (a) the number of Units held by the Profits Participation Limited Partner, divided by the number of all outstanding Units other than Units held by the Profits Participation Limited Partner, multiplied by (b) the amount distributed pursuant to Subsection (a) of the above bullet from the inception of KUE, multiplied by (c) a number (expressed as a fraction) equal to 1 minus the fraction used in clause (iii) of the prior bullet for the same distribution (unless the Independent Committee has increased the number of Profits Participation LP Units beyond the number initially authorized, in which case the maximum fraction for this purpose would be modified appropriately), less (d) all amounts previously distributed to the Profits Participation Limited Partner pursuant to this bullet; and

- Fourth, to the Common Limited Partners, the Profits Participation Limited Partner, and the General Partner in proportion to the number of Units held by each such Partner.

"Preferred Return" means (as to a Common Limited Partner and the General Partner) an amount equal to eight percent (8%) per annum, determined on the basis of a year of 365 or 366 days, as the case may be, for the actual number of days in the period for which the Preferred Return is being determined and be cumulative on the capital contributions of such Partners and shall be calculated from the date of such Partner's capital contribution; provided however that in the case of Common LP Units issued upon the conversion of preferred limited partner units at the initial closing of the offering, that the date of Capital Contribution shall be deemed to be the date of the initial closing of the offering solely for purposes of calculating the Preferred Return.

To the extent, at the time of any distribution or income or loss allocation pursuant to the Partnership Agreement, the 2/11ths portion of the Profits Participation LP Units has not then been fully allocated by KULG LLC-1 to employees, officers, directors, consultants and agents of KUE, its subsidiaries or joint ventures, then the distribution or income or loss allocation that would otherwise be attributable to such unallocated portion of the Profits Participation LP Units shall be reallocated among the Common Limited Partners and the General Partner in proportion to their Units for purposes of such distribution or income or loss allocation (including in connection with their Preferred Return).

Notwithstanding the foregoing, the Limited Partnership Agreement gives the General Partner the authority to override the distribution provisions of the Limitation Partnership Agreement described above in order to achieve the desired economic arrangement of KUE, which is: (i) first, to return the Partners' Capital Contributions to them; (ii) second, for the Common Limited Partners and the General Partner to receive their Preferred Return while the Profits Participation Limited Partner concurrently receives an amount equal to a fraction of the amount the Common Limited Partners and the General Partner received pursuant to their Preferred Return (such fraction to be equal to the portion of the Units held by the Profits Participation Limited Partner attributable to members of the Profits Participation Limited Partner other than the Principals), multiplied by the number of Units held by the Profits Participation Limited Partner divided by the number of outstanding Units other than those Units held by the Profits Participation Limited Partner; (iii) third, for the Profits Participation Limited Partner to receive an amount equal to a fraction of the amount the Common Limited Partners and the General Partner received pursuant to their Preferred Return (such fraction to be equal to the portion of the Units held by the Profits Participation Limited Partner attributable to members of the Profits Participation Limited Partner who are Principals or their affiliates), multiplied by the number of Units held by the Profits Participation Limited Partner divided by the number of outstanding Units other than those Units held by the Profits Participation Limited Partner; and (iv) finally, for all Partners (including the Profits Participation Limited Partner) to share in the profits of the Partnership in proportion to the number of Units held by them.

The General Partner may, in its discretion, when establishing the capital structure of subsidiaries or joint ventures, provide for a capital structure which provides for high-vote and low-vote (or non-voting) securities with substantially equivalent economic rights intended to correspond to the voting and economic structure of KUE (taking into account differences in legal form, such that corporate subsidiaries do not have specified distribution or liquidation rights with respect to common stock). Notwithstanding any contrary provisions below addressing equal merger consideration, to the extent securities of an entity corresponding to the voting structure of KUE are to be distributed to the Partners, the high-vote securities shall be distributed to KUE LLC for purposes of maintaining the voting structure subsequent to such distribution, as long as the securities otherwise have substantially equivalent economic rights and the high-vote securities have mandatory conversion features equivalent to the mandatory conversion features of the Class B Shares of the General Partner (as discussed below), it being understood that securities with high-voting rights shall not be deemed to have a higher economic value than securities with limited or no voting rights solely by reason of the disparity in voting rights.

14.10. Allocations of Income and Losses

In general (and subject to certain special tax and regulatory allocations), income and gains of KUE will be allocated to the Partners in the following priority:

- First, to the General Partner in an amount equal to the losses previously allocated to the General Partner pursuant to the third bullet in the losses allocation from the inception of KUE, less all income previously allocated to the General Partner pursuant to this bullet;

- Second, to the Common Limited Partners and the General Partner in proportion to and to the extent of the excess of their unreturned capital contributions over their adjusted capital account balances;

- Third, pursuant to subsections (a) and (b) in proportion as follows: (a) to the Common Limited Partners and the General Partner in proportion to and to the extent of the excess of: (i) the sum of their unreturned capital contributions and their undistributed Preferred Returns; over (ii) their adjusted capital account balances; and (b) to the Profits Participation Limited Partner an amount of income such that the amount of Income allocated pursuant to Subsections (a) and (b) of this bullet are in the same proportions as the distributions pursuant to Subsections (a) and (b) of the second bullet of 14.9 above would be in if cash, in the same amount as the income, were being distributed pursuant to the second bullet of 14.9 above;

- Fourth, to the Profits Participation Limited Partner in the amount necessary to ensure, as promptly as possible and to the extent feasible, that the cumulative net income of KUE for all periods since its inception shall have been allocated to the Common Limited Partners, the Profits Participation Limited Partner, and the General Partner in proportion to the number of Units held by each such Partner; and

- Fifth, to the Common Limited Partners, the Profits Participation Limited Partner, and the General Partner in proportion to the number of Units held by each such Partner.

In general (and subject to certain special tax and regulatory allocations), losses and deductions of KUE will be allocated to the Partners in the following priority:

- First, to the Common Limited Partners, the Profits Participation Limited Partner, and the General Partner in proportion to and to the extent of their positive adjusted capital account balances;
- Second, to the Common Limited Partners, the Profits Participation Limited Partner, and the General Partner in proportion to the number of Units held by each such Partner; and
- Third, to the General Partner.

To the extent, at the time of any distribution or income or loss allocation pursuant to the Partnership Agreement, the 2/11ths portion of the Profits Participation LP Units has not then been fully allocated by KULG LLC-1 to employees, officers, directors, consultants and agents of KUE, its subsidiaries or joint ventures, then the distribution or income or loss allocation that would otherwise be attributable to such unallocated portion of the Profits Participation LP Units shall be reallocated among the Common Limited Partners and the General Partner in proportion to their Units for purposes of such distribution or income or loss allocation (including in connection with their Preferred Return).

Notwithstanding the foregoing, the Limited Partnership Agreement gives the General Partner the authority to override the distribution provisions of the Limitation Partnership Agreement described above in order to achieve the desired economic arrangement of KUE, which is: (i) first, to return the Partners' Capital Contributions to them; (ii) second, for the Common Limited Partners and the General Partner to receive their Preferred Return while the Profits Participation Limited Partner concurrently receives an amount equal to a fraction of the amount the Common Limited Partners and the General Partner received pursuant to their Preferred Return (such fraction to be equal to the portion of the Units held by the Profits Participation Limited Partner attributable to members of the Profits Participation Limited Partner other than the Principals), multiplied by the number of Units held by the Profits Participation Limited Partner divided by the number of outstanding Units other than those Units held by the Profits Participation Limited Partner; (iii) third, for the Profits Participation Limited Partner to receive an amount equal to a fraction of the amount the Common Limited Partners and the General Partner received pursuant to their Preferred Return (such fraction to be equal to the portion of the Units held by the Profits Participation Limited Partner attributable to members of the Profits Participation Limited Partner who are Principals), multiplied by the number of Units held by the Profits Participation Limited Partner divided by the number of outstanding Units other than those Units held by the Profits Participation Limited Partner; and (iv) finally, for all Partners (including the Profits Participation Limited Partner) to share in the profits of the Partnership in proportion to the number of Units held by them.

14.11. Tax Distributions

The General Partner may decide to make a tax distribution from KUE on or before April 1st of any year following a taxable year in which net taxable income was allocated to any Partner. If the General Partner decides to make a tax distribution, then KUE will distribute cash available for distribution, if any, to those Partners receiving an allocation of net taxable income, regardless of whether such net taxable income is actually subject to tax. The amount of net taxable income upon which such a tax distribution will be made will be based on cumulative calculation of net taxable income and net taxable loss which have been allocated to each such Partner from the inception of KUE. Any tax distributions received by a Partner will be treated as an advance and will offset against any other distributions such Partner is entitled to receive from KUE.

Certain Partners contributed appreciated property to KUE in exchange for their interests in KUE. Under the Limited Partnership Agreement, and in accordance with Section 704(c) of the Code and the Treasury regulations thereunder, income, gain, loss, and deduction with respect to any property contributed to KUE must be allocated for tax purposes among the Partners in a manner that takes into account the variation between the adjusted basis of such property to KUE and its fair market value at the time the property was contributed to KUE. As a result of this requirement, it is possible the Partners who contributed appreciated property to KUE will be allocated more income and gains, and therefore be entitled to receive larger tax distributions under the Limited Partnership Agreement, than Partners who acquired their interests in KUE pursuant to this offering.

14.12. Fixed Overhead Payment

KUE, and/or one or more of its subsidiaries will pay $20 million annually to KULG in quarterly installments beginning July 1, 2006 pursuant to the Fixed Overhead Payment Agreement as an agreed upon payment to provide for the reimbursement of expenses and other costs incurred by KULG on behalf of KUE and its subsidiaries (including, but not limited to, salaries and bonuses of KULG employees providing services to KUE and its subsidiaries, fees and expenses relating to financing transactions and acquisitions, professional fees and other administrative expenses). To the extent that the U.S. $2,500,000 fee payable pursuant to an existing management services agreement with Knowledge Learning Corporation is paid to any person or entity other than a subsidiary of KUE, the amount payable to KULG by KUE will be reduced by the amount of such payment to such other person or entity. The $20 million annual fee will terminate upon the Initial Listing or the sale of KUE to a person or entity that is not a KUE LLC Entity.

14.13. Illiquidity Period

KUE will operate for a period of seven years from the date of the first closing of this offering. If there has not been an Initial Listing by the end of seven years from the date of the first closing of this offering, the Board of Directors of the General Partner will determine whether to pursue a sale of KUE or an Initial Listing (or a dual track process); provided, however, in the event that not less than 75% of the value of KUE at that time is represented by shares of securities listed on one or more recognized international securities exchanges and such shares have been or will be distributed as soon as reasonably practicable thereafter to the Investors and the Investors have received distributions of cash and/or such securities valued at amounts equal to or in excess of their original capital contributions, then there will be two extensions of one year's duration each (as determined by the Board of Directors of the General Partner) in order for KUE to complete either an Initial Listing or to have the remaining value of KUE represented by shares of securities listed on a recognized international securities exchange and to distribute such shares to the Investors.

If the Board determines to pursue a sale of KUE (or an Initial Listing or a dual track process), then the Principals must determine at such time whether they intend to participate as a potential bidder in the sale process.

If the Principals elect not to participate as a potential bidder in a sale process, then they will not be allowed to subsequently elect to participate as a potential bidder unless the sale process does not result in a buyer at a price the Independent Committee deems to be "fair." If the sale process results in a transaction that the Independent Committee deems to be "fair", the Principals will be required to sell their entire stake in KUE (Common LP Units and Profits Participation LP Units on an "as converted" basis) on the same terms as the Investors.

If the Principals elect to participate as a potential bidder in a sale process, then the sale process will be managed by the Independent Committee and the Principals will be precluded from participating in Board deliberations regarding the sale process. In addition, the Principals will be required to sell their entire stake in KUE on the same terms as the Investors to the winning bidder in the event the Principals do not submit the most attractive bid.

In the event that a sale of KUE or an Initial Listing has not occurred within nine years from the date the first Investors are admitted to KUE, the Independent Committee shall determine whether to pursue a sale of KUE (or an Initial Listing or a dual track process). A majority vote of the Independent Committee on this issue shall be binding on the Board of Directors of the General Partner and will require the Board of Directors of the General Partner to pursue such action within ninety (90) days.

14.14. Equal Merger Consideration Provision

The Principals (through KUE LLC) and the Investors will receive the same consideration per Common LP Unit and/or Class A/Class B Shares in connection with a sale, merger, recapitalization, share repurchase, dividend, or any other transaction where all holders of Common LP Units or shares in the General Partner receive consideration with respect to their Common LP Units or shares, other than with respect to corporate restructuring transactions, such as a holding company merger, conversion of KUE from an exempted limited partnership to a corporation or other entity, change of domicile, or any other transaction that the Independent Committee determines is a "corporate restructuring." In any such corporate restructuring transaction, the Principals (through KUE LLC) may receive securities with high-voting rights and the Investors may receive securities with limited or no voting rights so long as the consideration received by the Principals (through KUE LLC) and the other Partners per Common LP Unit have substantially equivalent economic provisions, it being understood that securities with high-voting rights shall not be deemed to have a higher economic value than securities with limited or no voting rights solely by reason of the disparity in voting rights.

14.15. Related Party Transactions

Related party transactions include transactions between (1) any of the Principals or any affiliates or any entity controlled by any of the Principals, and (2) KUE or any direct or indirect subsidiary or joint venture of KUE involving more than $1 million (including, for the avoidance of doubt, any merger, acquisition, asset purchase or similar transaction between KUE, its subsidiaries or joint ventures, on the one hand, and any person of which fifteen percent (15%) or more of the voting stock (or similar voting interests) is owned by KUE LLC or its affiliates, on the other hand). Related party transactions do not include (a) any transaction solely between or among KUE and any of its direct or indirect subsidiaries or joint ventures in which the Principals do not have any direct or indirect ownership interest (other than as a result of their ownership in the General Partner and KUE), (b) reasonable and customary director, advisory board member, or consultant compensation and benefits (including, without limitation, retirement, health, stock option and other benefit plans) as approved by the Independent Committee, provided that any such compensation, benefits and arrangements to the Principals that do not exceed $1 million in the aggregate annually shall not be subject to such approval and customary indemnification arrangements, (c) transactions and arrangements pursuant to or contemplated by express terms of the Limited Partnership Agreement of KUE, including the "Investment in Subsidiaries" and "Co-Invest Right" described below, and any payments pursuant thereto, (d) agreements, transactions and arrangements described in "Related Party Transactions" in this Private Placement Memorandum (including any indemnification arrangements, the Fixed Overhead Payment described above and other arrangements and transactions described therein) and any amendment thereto (so long as such amendment is not disadvantageous to the Investors as a whole in any material respect) or any transaction contemplated thereby and any payments pursuant thereto, and (e) admissions of any affiliate of the Principals to KUE as a Limited Partner on terms substantially equivalent to concurrent admissions of persons that are not affiliates of the Principals.

If the size of the related party transaction is greater than $1 million and equal to or less than $50 million, then either (a) the Independent Committee must approve the transaction or (b) the transaction must be approved by the holders of a majority of the Common LP Units unaffiliated with the Principals.

If the size of the related party transaction is greater than $50 million, then the transaction must be approved by both (a) the Independent Committee and (b) the holders of a majority of the Common LP Units unaffiliated with the Principals.

14.16. Investment in Subsidiaries and Joint Ventures

The Principals will agree (on behalf of themselves and their affiliates) that KUE will be their exclusive vehicle for equity investment opportunities in and acquisitions of for-profit companies engaged primarily in the business of pre-K through 12th grade education of children (other than companies in which the Principals or their affiliates directly or indirectly owns fifteen percent (15%) or more of the voting stock (or similar voting interests) as of the date of the first closing of the offering, which are LeapFrog Enterprises, Inc. and Nobel Learning Communities, Inc.). The Principals will not acquire or make an equity investment in such companies unless such acquisition or investment opportunity has been first presented to the Independent Committee and subsequently declined by the Independent Committee or initially pursued but later abandoned by KUE. For purposes of the foregoing limitation on investment, an equity investment shall not include equity securities that are (a) issued in respect of debt securities in connection with a restructuring, reorganization, sale or other similar transaction in respect of a company; (b) issued in connection with an exchange offer for debt securities; or (c) indirectly owned through a fund or other investment vehicle managed by a person other than any Principal or affiliate of a Principal. The Principals may co-invest with KUE in such companies, subject to the approval of the Independent Committee and the co-investment rights of Investors in the Limited Partnership Agreement.

Not in limitation of any commitments or restrictions the Principals may have entered into, prior to an Initial Listing, KUE may not permit any of its subsidiaries or controlled joint ventures (which shall not include, for the avoidance of doubt, certain exempt companies contemplated by the above paragraph) to issue or grant any equity interests in such subsidiaries or controlled joint ventures to any of the Principals or any of their affiliates (other than KUE, its subsidiaries and controlled joint ventures) unless (i) the Independent Committee has approved and the Investors who are accredited investors (as such term is defined in Regulation D) or otherwise legally eligible to participate are offered the opportunity to participate on the same terms as the Principals and their affiliates and in proportion to their economic ownership of KUE or (ii) such subsidiary or joint venture of KUE has completed an initial listing on a recognized international securities exchange. The foregoing restrictions will not apply to the Principals and/or their affiliates: (a) exercising co-investment, purchase or other similar rights in respect of securities of K12 Inc. (including warrants and options) held by them on the first closing of this offering and in respect of securities of K12 Inc. acquired pursuant to co-investment, purchase or other similar rights exercised in accordance with this clause (a); (b) receiving securities of K12 Inc. (including warrants and options) as compensation for services in their capacity as directors (or advisory board members) of K12 Inc.; or (c) exercising or converting any warrants or options (or other securities) held as of the first closing of this offering or acquired pursuant to clause (a) or (b).

The General Partner may offer co-investment opportunities to any person (except for the Principals and their affiliates other than KUE's subsidiaries and joint ventures) to invest with KUE or to invest in a subsidiary or joint venture of KUE.

14.17. Transferability

The Common LP Units and the Class A Shares comprising the Units owned by the Investors will not be separately transferable, and the Units are to be transferred as a whole unless otherwise approved by the Board of Directors of the General Partner and the Independent Committee.

Units held by an Investor may not be sold, transferred or assigned without the prior written consent of the General Partner, not to be unreasonably withheld. During the first two years after the applicable closing of the offering, the General Partner intends to approve transfers of Units to an affiliate of the Investor in compliance with applicable law. After such time, the General Partner intends to approve transfers of the Units to an affiliate of the Investor or to another Investor (and affiliates thereof), in each case in compliance with applicable law. The General Partner also intends to approve transfers pursuant to the Tag-Along Right and Drag-Along Right provisions described below.

Although the Limited Partnership Agreement of KUE and the organizational documents of the General Partner permit the foregoing transfers and the General Partner has agreed with certain investors to approve such transfers, applicable Caymans Island law gives the General Partner full discretion to approve or disapprove transfers of Units in KUE. Nevertheless, if the General Partner does not approve a permitted transfer, the parties seeking to effect such transfer may have a claim against the General Partner and KUE.

14.18. Co-Invest Right

Prior to the Initial Listing, if KUE proposes to issue for cash any Units or securities convertible into Units, then KUE is required to offer to each Investor that is an accredited investor (as such term is defined in Regulation D) or is otherwise legally eligible to participate in the offering the right to purchase a pro rata portion of such securities. This purchase right does not apply to (i) the first 1.5 million Units (including such number of Units issued at the first closing of this offering) issued by KUE to Investors through March 31, 2007, (ii) any public offering of Units or other securities by KUE; (iii) any issuance of Units in connection with a merger, consolidation, transfer of assets or other business combination involving KUE (or its subsidiaries or joint ventures); (iv) any issuance of Units pursuant to any unit option plan, restricted unit plan or other benefit plan, the terms of which are approved by the General Partner, provided that the aggregate amount of all Units issued pursuant to this clause (iv) (which does not include any Profits Participation LP Units) shall not exceed 10% of all Units outstanding on a fully diluted basis on the date of such issuance without the approval of the Independent Committee and shall in no event exceed 20% of all Units outstanding on a fully diluted basis on the date of such issuance; (v) any issuance of Units in connection with any loan transaction and/or equipment lease, the terms of which are approved by the General Partner; (vi) any issuance of Units pursuant to any transactions, the terms of which are approved by the General Partner primarily for the purpose of (a) joint ventures or strategic alliances, (b) development, production or distribution of the products or services of KUE, its subsidiaries or joint ventures, (c) purchase or licensing of technology, or (d) any other transactions that are primarily for purposes other than raising capital, or (vii) any issuance of Units upon conversion or exercise of any Units issued in compliance with this co-invest right provision; or (viii) any issuance of Units in connection with Unit splits or Unit dividends or reclassifications.

Prior to the Initial Listing, Investors have substantially equivalent rights with respect to issuances of securities by the General Partner (with the additional exemption on the issuance of up to 10,000 additional Class B Shares to the Principals or any of their Affiliates).

14.19. Tag-Along Right

A "Tag-Along Transfer" means a sale or other transfer for economic value of the Common LP Units held by KUE LLC and its affiliates (and, unless otherwise approved by the Board of Directors and the Independent Committee of the General Partner, a corresponding percentage of Class A Shares held by KUE LLC) to a Person that is not KUE LLC or an affiliate ("KUE LLC Entity").

Unless an Initial Listing occurred, a Tag-Along Transfer may not be consummated unless the proposed purchaser offers to each Investor the opportunity to include a pro rata portion of such Investor's Units in the Tag-Along Transfer (at the same consideration per Unit received by the KUE LLC Entity). If the total number of Units and corresponding Class A Shares proposed to be sold to the proposed purchaser exceeds the number of Units and corresponding Class A Shares which the proposed purchaser is willing to purchase, the number of Units and corresponding Class A Shares to be sold will be reduced pro rata based on the total number of Units held by the transferor(s) initiating the Tag-Along Transfer and each participating Investor.

Following the Initial Listing, the tag-along right will continue for certain Investors with respect to transfers for value of the Units (or units of the listed entity as the case may be) by the Principals or their affiliates to non-affiliates (excluding transfers on a recognized international securities exchange) above the following thresholds in one or more transactions: (i) 15% of the Principals' original KUE holdings to any single buyer (or affiliates of that buyer) or (ii) 33% of the Principals' original KUE holdings in the aggregate.

14.20. Drag-Along Right

A "Drag-Along Transfer" means a sale or other transfer for economic value of a majority of the Common LP Units held by KUE LLC or its affiliates (and, unless otherwise approved by the Board of Directors and the Independent Committee of the General Partner, a corresponding percentage of Class A Shares held by KUE LLC). Prior to the Initial Listing, in the event of a Drag-Along Transfer of Common LP Units and corresponding Class A Shares to a proposed purchaser that is not a KUE LLC Entity (a "Proposed Drag-Along Transfer"), KUE LLC may require Investors to sell a pro rata portion (based on the percentage of Units held by KUE LLC being sold in the Proposed Drag-Along Transfer) of their Units and Class A Shares in the Proposed Drag-Along Transfer to the proposed purchaser on the same terms and conditions as KUE LLC in the Proposed Drag-Along Transfer.

14.21. Additional Listing of Investors' Units

Beginning any time after six months after the Initial Listing, one or more holders holding an aggregate of $100 million of more of the Units (calculated based on the issue price) may request KUE and the General Partner to take such action as may be necessary (including regulatory and legal actions) for their Units to be freely tradable and not subject to volume restrictions on the international securities exchange on which the Initial Listing occurred; provided that no more than one such action may be required in any 12 month period and customary cut-back and other provisions will apply in any such listing or underwritten transaction, as the case may be. KUE will use its commercially reasonable efforts to cause such action to cover such holders and the securities of any other holders legally eligible to participate in such action.

14.22. Subsequent Capital Raising Activities

Subsequent to the completion of this offering, KUE may raise additional capital through the sale of equity or debt securities. KUE will not have any preferred limited partner units outstanding upon completion of this offering but KUE may issue limited partner units with preferences over the Common LP Units in the future and may amend the Limited Partnership Agreement accordingly.

14.23. Periodic Reporting; Books and Records

As soon as practicable after the end of each fiscal year but in no event more than 180 days thereafter, each Partner will be sent audited financial statements of KUE for the prior year. These financial statements will include: (i) profit and loss statements and (ii) a balance sheet showing KUE's financial position as of the end of that fiscal year. KUE will also provide to each Partner on a semi-annual basis a report concerning KUE's operations. As soon as practicable after the end of each fiscal year, each Partner will be furnished with all information necessary for the preparation of each Partner's U.S. Federal income tax return and a copy of KUE's federal, state, and local tax or information returns for the year.

KUE will maintain at its principal place of business full and complete books and records for KUE including the following: (1) a current list of the full name and last known business or residence address of each Partner set forth in alphabetical order, together with the capital contribution and share of income and losses of each Partner; (2) a copy of the Statement filed under to Section 9 of the ELP Law and all amendments thereto; (3) copies of KUE's federal, state, and local income tax returns and reports, if any, for the six most recent taxable years, to the extent that such exist; (4) copies of the Limited Partnership Agreement and all amendments thereto; and (5) any other information required to be maintained by the ELP Law. Upon the request of a Partner, the General Partner will promptly deliver to the requesting Partner, at the expense of KUE, a copy of the information listed in the foregoing sentence.

The General Partner will provide such periodic reports if engaged in any business other than acting as General Partner of KUE or if it owns any material assets other than an interest in KUE.

14.24. Indemnification

KUE will indemnify, to the fullest extent permitted by applicable law, the General Partner, and its members, officers, directors, and employees, and at the General Partner's discretion, any other person providing services to KUE, its subsidiaries or joint ventures, ("Indemnified Persons") from and against loss because of any action performed by them on behalf of KUE or of the failure to take any action on behalf of KUE, unless such loss resulted from the Indemnified Person acting in bad faith or the willful misconduct, fraud or gross negligence of such Indemnified Person, or a material breach of the Limited Partnership Agreement by such Indemnified Person. Indemnified persons may receive advances or be reimbursed for their expenses.

14.25. Amendment of the Limited Partnership Agreement

Generally, the Limited Partnership Agreement may be amended with the consent of the General Partner. Subject to the exceptions specified in the Limited Partnership Agreement, amendments adversely affecting the Common LP Units may not be effected without a majority of the votes represented by Units held by Investors.

Notwithstanding the foregoing, the General Partner, acting reasonably and in good faith, may amend the Limited Partnership Agreement without the consent of any Limited Partner (a) to correct any typographical or similar ministerial errors; (b) to delete or add any provision required to be so deleted or added by applicable law or any government official having jurisdiction over KUE; (c) to cure any mistake or ambiguity, to correct or supplement any provision herein which may be inconsistent with any other provision herein; (d) to take such actions as may be necessary (if any) to ensure that KUE will be treated as a partnership for U.S. federal income tax purposes; (e) to reflect the admission of any additional Limited Partner and otherwise to reflect such admission or an additional investment by a Limited Partner on the books and records of KUE pursuant to the General Partner's power of attorney; (f) to take such actions as may be necessary (if any) to ensure that neither of KUE or the General Partner (or any subsidiary of the foregoing) will be subject to regulation under ERISA or the Investment Company Act; (g) to take such actions as may be necessary (if any) to ensure that the General Partner (or any Subsidiary) will not be subject to the Investment Advisers Act; (h) to reflect any increase in the number of Profits Participation LP Units approved by the Independent Committee and related changes in allocation and distribution provision; (i) to make changes negotiated with Limited Partners admitted in any subsequent closing of the offering, so long as such changes do not, in the good faith determination of the General Partner and with the approval of the Independent Committee, adversely affect the rights, obligations and economic interests of the existing Limited Partners; and (j) to the extent necessary to give effect to partnership interests issued to additional Limited Partners after the Offering Period. The General Partner shall provide prompt written notice of any such amendments to the Limited Partners.

14.26. Confidentiality

Each Investor is subject to an obligation to keep KUE related information confidential, subject to limited exceptions. KUE or the General Partner will be entitled to enforce such obligations and take such actions to maintain the confidentiality of KUE related information, including without limitation withholding any periodic or financial reports (with the approval of the Independent Committee) from an Investor that has violated its confidentiality obligations.

14.27. Jurisdiction

Any actions or proceedings under the Limited Partnership Agreement or with respect to the General Partners or this offering and the related agreements are subject to binding arbitration in London, United Kingdom.

14.28. Limitation of Participation

Under circumstances where the continuing participation in KUE by an Investor would have a material adverse effect on KUE or a subsidiary, the General Partner may cause an Investor's interest in KUE to be redeemed or transferred.

14.29. United States Trade or Business

The General Partner will use its reasonable best efforts not to cause or allow KUE to engage in or invest (other than through an entity that is not a pass-through entity) in a pass-through entity (for U.S. federal income tax purposes) that engages in: (i) any commercial activities within the meaning of Section 892(a)(2) of the Code, or (ii) any activity which constitutes the conduct of a trade or business in the United States and generates income which constitutes "effectively connected income" in the hands of a non-U.S. Limited Partner. KUE will not take a position in any United States federal or state income tax return that KUE is engaged in a trade or business in the United States that causes the non-U.S. Limited Partners to have income which constitutes "effectively connected income" in the hands of non-U.S. Limited Partners. In addition, the General Partner will use its reasonable best efforts to cause KUE not to invest in a U.S. real property interest described in Section 897(c)(1)(A)(i) or the Code.

The General Partner may, in its discretion, form a separate investment entity to pursue any investment opportunity that is unavailable to KUE by reason of the foregoing, and may offer co-investment opportunities to the Partners eligible to participate in such opportunities in proportion to their Units or on such other reasonable basis as the General Partner may determine.

EACH PROSPECTIVE NON-U.S. LIMITED PARTNER SHOULD REVIEW THE SECTION ENTITLED "CERTAIN INCOME TAX CONSEQUENCES" AND CONSULT ITS TAX AND OTHER ADVISORS IN DETERMINING THE POSSIBLE TAX, EXCHANGE CONTROL OR OTHER CONSEQUENCES TO IT UNDER THE LAWS OF THE U.S. AND OTHER JURISDICTIONS OF WHICH IT IS A CITIZEN, RESIDENT OR DOMICILIARY, IN WHICH IT CONDUCTS BUSINESS OR IN WHICH IT OTHERWISE MAY BE SUBJECT TO TAX, OF THE PURCHASE AND OWNERSHIP OF UNITS.

14.30. Term of KUE; Term of the General Partner

The term of KUE will be indefinite, unless terminated earlier as provided for below. The term of the General Partner will be indefinite, unless terminated earlier in accordance with the Organizational Documents.

The following events will cause the dissolution of KUE:

- The withdrawal, dissolution, bankruptcy, or resignation of a General Partner, unless the business of KUE is continued by the election of a new General Partner by the vote of a majority in number of the Units held by Common Limited Partners within 90 days of the happening of such event;

- The agreement of the General Partner and the holders of a majority of the Units held by the Limited Partners holding Common LP Units;
- The sale or distribution of all or substantially all of KUE's assets; or
- As otherwise provided by law.

If KUE is dissolved and not reconstituted and continued, the General Partner is then required to wind up the affairs of KUE and to liquidate and sell its assets in an orderly manner. Upon the winding up and termination of the business and affairs of KUE, its assets (other than cash) will be sold, its liabilities and obligations to creditors and all expenses incurred in its liquidation will be paid. The net proceeds from such sales (after deducting all selling costs and expenses in connection therewith) and any released reserves will then be distributed to the Partners in accordance with "– Distributions" by the later of the end of the taxable year of KUE which includes the liquidation date or the 90th day following the liquidation date. KUE property will not be distributed in kind to the Partners upon the dissolution and termination of KUE unless otherwise agreed by the General Partner.

15. MANAGEMENT INCENTIVE PLANS AND EMPLOYMENT AGREEMENTS

Certain key terms of the following incentive plans and employment agreements of the Company, which are subject to and qualified in their entirety by reference to any underlying documentation as applicable, are outlined below. Copies of such documentation have been provided or are available upon request and the summaries below are qualified in their entirety by reference to such documentation.

15.1. Long Term Incentive Plan and Agreements of Knowledge Learning Corporation

Effective as of December 6, 2005, KLC put in place a long term incentive plan ("LTIP") for officers, employees or consultants, providing for incentive compensation payments based upon the achievement of certain performance criteria determined by KLC's Compensation Committee. Under the terms of the long term incentive award agreements entered into with eligible recipients pursuant to the LTIP, if the recipient is terminated by KLC without cause after the first year of any 3-year performance cycle, the first of which begins in 2006, or upon death, permanent disability or retirement after the first 6 months of any performance cycle, the recipient is eligible to receive a pro rata portion of any incentive award earned. The recipient is also eligible to receive a pro rata portion of any incentive award earned in the event of a sale of KLC or a termination of the LTIP.

15.2. Profits Interest Grants

KUE expects to grant profits interests in KUE to its (or its subsidiary's) present and future officers, directors, employees and consultants, aggregating up to 2% of KUE's aggregate profits, subject to increases approved by the Independent Committee. Such grants would be dilutive to the holders of Units.

15.3. Stock Appreciation Rights Plan of Knowledge Schools, Inc.

KSI established a stock appreciation rights ("SAR") plan for directors, officers, employees or consultants of KSI and its subsidiaries on April 25, 2004, pursuant to which a maximum number of 18,410 phantom shares (which may be converted to options) may be granted and an equivalent of 4,353.860 phantom shares are issued and outstanding. SARs may be granted under the plan until April 24, 2014 and shall vest and become exercisable as set forth in the holder's SAR agreement. These phantom shares will provide the holders with the appreciation in value of the equivalent of 1.6% of KSI's equity (after payment of $7.8 million to KLC's departing chief executive officer in settlement of his SARs, and based on 273,904.89884 shares as of April 28, 2006). Beginning in 2006, incentive compensation at the KLC level to management will be made through the LTIP described above, while directors of KSI may continue to be granted SAR.

15.4. Stock Option Grants by Knowledge Schools, Inc.

Les Biller and Stephen Goldsmith have been granted options to purchase an aggregate of 3,412.6 shares of common stock of KSI. Les Biller is on the Advisory Board of KUE and a director of KSI. Stephen Goldsmith is the Senior Vice President of Strategic Planning & Worldwide Government Programs for KUE and a director of KSI. KSI may issue similar options from time to time.

15.5. Employment Agreements

With one exception, the Company's executives do not have long-term employment agreements. KLC entered into an employment agreement with Elanna Yalow as of August 1, 2004 with an employment term of three years, unless terminated earlier. She serves as KLC's President and COO with a fixed annual base salary of $300,000 plus bonuses, as well as stock appreciation rights. If KLC terminates Ms. Yalow's employment at any time, other than for death, disability or cause, KLC is required to pay as severance, Ms. Yalow's base compensation for the balance of the severance period. In case of termination after expiration of the employment term, KLC is required to pay, in addition to the severance pay, unpaid base compensation earned as of the date of termination.

In connection with employment arrangements for newly hired officers (including Peter Maslen, Derek Feng and Kal Raman), the Company is providing equity-based compensation in amounts to be agreed, which will be subject to customary terms and conditions.

15.6. KULG Arrangements

Certain of the executives providing services to KUE and its subsidiaries are employees and officers of, or consultants to, KULG. Stephen Goldsmith, Senior Vice President of KULG, has a three-year employment agreement beginning February 1, 2005, terminable at will by KULG or Mr. Goldsmith, subject to severance benefits in certain circumstances and death and disability benefits. The agreement provides for a $500,000 annual salary and targeted $250,000 discretionary bonus. Nina Rees, Vice President of Strategic Initiatives of KULG, has an employment agreement terminable by her or KULG with 90 days' notice and providing an annual salary of $180,000 plus a discretionary bonus. Ted Sanders has a 24-month consulting agreement with KULG beginning March 1, 2005 pursuant to which he receives consulting fees at a $25,000 annual rate for the first 12 months and a $35,000 annual rate for the second 12 months. All of these amounts, together with the compensation of other KULG employees providing services to KUE will be paid from the annual overhead expense payment KUE will pay to KULG, as described in "Related Party Transactions."

16. RELATED PARTY TRANSACTIONS

Certain key terms of the following related party transactions of the Company, which are subject to and qualified in their entirety by reference to their respective underlying documentation as applicable, are outlined below. Copies of such documentation have been provided or are available upon request, and the summaries below are qualified in their entirety by reference to such documentation.

16.1. Real Estate Support Management Agreement of Knowledge Learning Corporation

KLC entered into a Real Estate Support Management Agreement with Greenstreet Real Estate Partners (formerly Greenstreet Realty Partners, L.P.), an entity controlled by the Principals, on January 4, 2006, pursuant to which KLC obtains certain real property support services from Greenstreet Real Estate Partners. The Agreement is non-exclusive and the Company may consider and solicit proposals from other entities. Payment obligations are to be provided for in separate agreements, none of which have been entered into as of the date of this Memorandum. The initial term of the Agreement expires on December 31, 2016 (with automatic one-year extensions unless notice is given to the other party). The Agreement can be terminated by either party for convenience on December 31 in any year or for breach with prior written notice.

16.2. Fixed Overhead Payment Agreement

As reimbursement of expenses incurred by KULG, an affiliate of the Company controlled by the Principals, on behalf of KUE and its subsidiaries (including salaries and bonuses of KULG employees providing services to KUE and its subsidiaries, fees and expenses relating to financing transactions and acquisitions, professional fees and other administrative expenses), KUE has an obligation to pay $20 million annually to KULG in quarterly installments beginning July 1, 2006 pursuant to the Fixed Overhead Payment Agreement. Of this amount, $2.5 million will be paid to KUE by KLC pursuant to the existing Management Services Agreement described below.

16.3. Note Payable to KULG by KU Education, Inc.

On January 6, 2005, KUE Inc. executed a promissory note in favor of KULG, an entity controlled by the Principals, in the amount of $200.0 million, the proceeds of which were used in connection with the acquisition of KinderCare by KLC. This note has a seven year maturity and accrues interest at the "reference rate" set by Bank of America plus 1.25% per annum. The note may be prepaid, in whole or in part, without any premium or penalty. KUE Inc. currently owes approximately $183.9 million under the note.

16.4. Asset Management Agreements with Greenstreet Real Estate Partners (formerly Greenstreet Realty Partners, L.P.)

Greenstreet Real Estate Partners (formerly Greenstreet Realty Partners, L.P.), an entity controlled by the Principals, entered into asset management agreements dated as of November 9, 2005 with each of KC PropCo Holding I LLC ("PropCo Holding"), KC PropCo, LLC ("PropCo") and Mini-Skools Limited ("MSL"), each an indirect wholly owned subsidiary of KLC, pursuant to which Greenstreet Real Estate Partners provides asset management and consulting services to PropCo Holding, PropCo and MSL with respect to the real property each company respectively owns, in return for a total annual fee of $8,250,000 payable in 12 equal monthly installments starting December 1, 2005. The initial term expires on December 31, 2016 (with automatic one-year extensions unless notice is given to the other party), and the Agreement can be terminated for breach with prior written notice.

16.5. Management Services Agreement

KLC is a party to a management services agreement with Knowledge Universe Limited LLC, one of our affiliates controlled by the Principals, pursuant to which Knowledge Universe Limited LLC has agreed to provide management, consulting and financial planning services on an ongoing basis to KLC and its subsidiaries. In consideration of these services, KLC is obligated to pay Knowledge Universe Limited LLC an annual management fee of $2.5 million payable in equal quarterly installments on the first day of each calendar quarter in advance, effective January 1, 2005. However, in the event of a payment default under KLC's senior credit agreement or the indenture governing the notes, or a bankruptcy, liquidation or winding-up of KLC, the payment of all accrued and unpaid management fees is subordinated to the prior payment in full of all amounts due and owing under KLC's senior credit facility and the indenture governing the Senior Subordinated Notes.

The management services agreement has a ten-year term which extends automatically on each anniversary of the agreement for one additional year unless either party gives prior notice that the term will not be extended. In addition, the management services agreement provides for the payment to Knowledge Universe Limited LLC of customary fees for services provided in connection with extraordinary services and reimbursement of reasonable out-of-pocket expenses, with limited exceptions.

16.6. KinderCare Acquisition Financing

Affiliates purchased a majority of the $250.0 million of senior subordinated bridge notes that we issued as part of the financing of the KinderCare acquisition, which were repaid with the net proceeds of the Senior Subordinated Notes. In connection with the KinderCare merger and related transactions, KLC paid affiliates of KULG commitment fees, expense reimbursements and other amounts totaling approximately $15.9 million.

16.7. Maron & Sandler

The law firm of Maron & Sandler serves as outside general counsel to us and our affiliates. Messrs. Maron and Sandler are shareholders of Maron & Sandler. Mr. Sandler is a member of the board of directors of KSI and is the General Counsel of KUE. Mr. Maron is a member of the board of directors of both KLC and its parent, KSI. In addition, Mr. Maron holds an interest in an entity that holds common stock of KSI. These shares of common stock amount to a less than 0.1% economic interest in KSI.

16.8. RFG Financial Group, Inc.

RFG Financial Group, Inc., an entity controlled by Ralph Finerman, a member of the boards of directors of KLC and Nextera Enterprises, Inc. and an officer or director of other privately-held affiliates of KLC and Krest LLC, periodically provides financial consulting services to KULG and its affiliates. In addition, Mr. Finerman holds an interest in an entity that holds common stock of KSI. These shares of common stock amount to a less than 0.1% economic interest in KSI.

16.9. Purchase of EdSolutions, Inc.

In November 2004, one of KSI's affiliates acquired ESI in a cash merger transaction for $5.5 million, of which $2.2 million was paid to another of our affiliates in respect of its preferred stock ownership in ESI. Following the closing, the buyer contributed the stock of ESI to KSI in exchange for $5.5 million of preferred stock of KSI, and KSI contributed ESI to KLC. In connection with the KinderCare acquisition, KSI redeemed the preferred stock (including accrued dividends) for $5.6 million.

16.10. Indebtedness of KUE with affiliates

The proceeds of the $150 million term loan facility that KUE entered into on March 29, 2006 with an affiliate of Credit Suisse, one of the Agents (as described in "Knowledge Universe Education (KUE) – Term Loan Facility"), were used to repay existing debt of KUE to entities controlled by Michael Milken.

16.11. *k*12

An affiliate of Michael Milken and Lowell Milken owns the *k12* trademark and related domain names, and licenses them to *k12* for $25,000 annually pursuant to a perpetual license.

An affiliate of Michael Milken and Lowell Milken owns (i) 3,106,774 shares of common stock of *k*12, (ii) warrants to purchase 53,364 shares of *k*12 common stock at $1.60 per share and (iii) warrants to purchase 1,164,179 shares of *k*12 Series B Preferred Stock at $1.34 per share.

16.12. Condors LLC

Condors LLC, substantially all of which is owned by the Principals, is the lender under the Junior Mezzanine Loan entered into in connection with the new CMBS financing.

17. ELIGIBLE INVESTORS

17.1. UNITED STATES SECURITIES ACT OF 1933

The Units will not be registered under the Securities Act, in reliance upon the exemption from registration provided by Section 4(2) of the Securities Act and will not be registered under the securities laws of any jurisdiction.

Accordingly, the Units are initially being offered and sold only to "accredited investors."

Each investor is required to enter into a Subscription Agreement to purchase the Units. In the Subscription Agreement, it will be required to represent, among other customary private placement representations, as follows:

- that it is an "accredited investor" (as such term is defined in Regulation D under the Securities Act);
- that it has carefully read and understood this Memorandum and the organizational documents of KUE in their entirety and that it has relied on such documents in making its investment decision;
- that it has had an opportunity to receive answers from KUE to its questions regarding the Units and other matters pertaining to its investment, and it has obtained all additional information it has requested from KUE to verify the accuracy of the information furnished to it;
- that it is capable of evaluating the merits and risks of purchasing the Units and of making an informed investment decision with respect thereto;
- that its financial situation is such that it can afford to bear the economic risk of holding the Units as an illiquid investment for an indefinite period of time, and it can afford to suffer the complete loss of its investment;
- that it is acquiring the Units for its own account for investment purposes only and not with a view to resale or distribution; and
- that it understands that it must bear the economic risk of an investment in the Units for an indefinite period of time.

In the Subscription Agreement, each investor will be required to represent whether or not it is a U.S. Person or non-U.S. Person (as such terms are defined in Regulation S under the Securities Act). Each non-U.S. Person will be required to represent:

- whether it is purchasing the Units in an offshore transaction within the meaning of Regulation S; and
- that it is eligible to purchase the Units under the laws applicable to it.

A copy of the form of the Subscription Agreement will be provided. Each investor should carefully read the Subscription Agreement in its entirety so as to fully understand the representations and warranties it is required to make pursuant to the Subscription Agreement.

The Units cannot be resold or otherwise transferred unless they are subsequently registered under the Securities Act and other applicable securities laws, or exemptions from such registration requirements are available. It is not contemplated that registration of the Units under the Securities Act or other securities laws will ever be effected. There is no public market for the Units, and none is expected to develop. Therefore, an investor that purchases the Units may be required to hold the Units for an indefinite period of time. The Units, if certificated, will bear a legend describing such transfer limitations.

17.2. United States Employment Retirement Income Security Act of 1974

An investment in the Units and the underlying Common LP Units and Class A Shares by certain U.S. employee benefit plans is subject to additional considerations because the investments of such plans are subject to the fiduciary responsibility and prohibited transaction provisions of the U.S. Employee Retirement Income Security Act of 1974, as amended ("ERISA"), and restrictions imposed by Section 4975 of the U.S. Internal Revenue Code of 1986, as amended (the "IRC"). For these purposes the term "employee benefit plan" includes, but is not limited to, qualified pension, profit-sharing and stock bonus plans, Keogh plans, simplified employee pension plans and tax deferred annuities or IRAs established or maintained by an employer or employee organization. Among other things, such employee benefit plans should give consideration to:

- whether the investment is prudent under ERISA.
- whether in making the investment, that plan will satisfy the diversification requirements of ERISA; and
- whether the investment will result in recognition of unrelated business taxable income by the plan and, if so, the potential after-tax investment return.

The person with investment discretion with respect to the assets of an employee benefit plan, often called a fiduciary, should also determine whether an investment in the Units and the underlying Common LP Units and Class A Shares is authorized by the appropriate governing instrument and is a proper investment for the plan.

Section 406 of ERISA and Section 4975 of the IRC also prohibit employee benefit plans, and also IRAs that are not considered part of an employee benefit plan, from engaging in specified transactions involving "plan assets" with parties that are "parties in interest" under ERISA or "disqualified persons" under the IRC with respect to the plan.

In addition to considering whether the purchase of Units and the Common LP Units and Class A Shares is a prohibited transaction, a fiduciary of an employee benefit plan should consider whether the plan will, by making such an investment, be deemed to own an undivided interest in the assets of KUE or the General Partner, with the result that KUE or the General Partner would be subject to the regulatory restrictions of ERISA, including its prohibited transaction rules, as well as the prohibited transaction rules of the IRC.

The U.S. Department of Labor regulations under ERISA provide guidance with respect to whether the assets of an entity in which employee benefit plans acquire equity interests would be deemed "plan assets" under some circumstances. Under these regulations, an entity's assets would not be considered to be "plan assets" if, among other things:

(a) the equity interests acquired by employee benefit plans are publicly offered securities, *i.e.*, the equity interests are widely held by 100 or more investors independent of the issuer and each other, freely transferable and registered under some provisions of the federal securities laws;

(b) the entity is an "operating company," meaning it is primarily engaged in the production or sale of a product or service other than the investment of capital either directly or through a majority-owned subsidiary or subsidiaries; or

(c) the entity is a "venture capital operating company," meaning that at least 50% of its assets, determined on certain testing dates, are invested in operating companies with respect to which the entity has contractual management rights which the entity actually exercises in the ordinary course of its business; or

(d) there is no significant investment by benefit plan investors, which is defined to mean that less than 25% of the value of each class of equity interest is held by the employee benefit plans referred to above, IRAs and other employee benefit plans not subject to ERISA, including U.S. and non-U.S. governmental plans.

The General Partner intends to operate the General Partner and KUE in such fashion that, for purposes of the plan asset regulations, the assets of KUE and the General Partner will not be considered assets of any plan investing in KUE and the General Partner. The Limited Partnership Agreement (and the organizational documents of the General Partner) will confer on the General Partner (and the Principals) the authority to take any action necessary or desirable in order to prevent Company assets and General Partner assets from being considered to be plan assets, including the authority to restructure any aspects of KUE and the authority to cause the redemption or sale of Units held by some or all plan investors.

KUE is considering whether and to what extent to permit plan investors to invest in the Units. Due to the complexity of the applicable rules and the penalties imposed upon persons involved in prohibited transactions, it is particularly important that potential purchasers that are plans consult with their counsel regarding the consequences under ERISA of their acquisition and ownership of the Units. Employee benefit plans that are governmental plans (as defined in Section 3(32) of ERISA) and certain church plans (as defined in Section 3(33) of ERISA) are not subject to ERISA requirements but may be subject to analogous provisions under applicable state, local or non-U.S. law.

17.3. Anti-Money Laundering – Cayman Islands

In order to comply with regulations aimed at the prevention of money laundering in any applicable jurisdictions, the General Partner and KUE are required to adopt and maintain anti-money laundering procedures, and may require prospective investors to provide evidence to verify their identity. Accordingly, the General Partner (and its directors) reserve the right to request such information as they consider necessary to verify the identity of a prospective investor. Where permitted, and subject to certain conditions, the General Partner and KUE may also delegate the maintenance of its anti-money laundering procedures (including the acquisition of due diligence information) to a suitable person. The General Partner (and its directors) may refuse to accept any subscription application if a prospective investor delays in producing or fails to produce any information required by the General Partner (and its directors) for the purpose of verification and, in that event, any funds received will be returned without interest to the account from which the moneys were originally debited.

The General Partner and KUE also reserve the right to refuse to make any redemption payment to a shareholder of the General Partner or a partner of KUE, as applicable, if they suspect or are advised that the payment of redemption proceeds to such person might result in a breach of applicable anti-money laundering or other laws or regulations by any person in any relevant jurisdiction, or if such refusal is considered necessary or appropriate to ensure the compliance by the General Partner and KUE with any such laws or regulations in any applicable jurisdiction.

If any person resident in the Cayman Islands knows or suspects that another person is engaged in money laundering or is involved with terrorism or terrorist property and the information for that knowledge or suspicion came to their attention in the course of their business the person will be required to report such belief or suspicion to either the Financial Reporting Authority of the Cayman Islands, pursuant to the Proceeds of Criminal Conduct Law (2005 Revision) if the disclosure relates to money laundering or to a police officer of the rank of constable or higher if the disclosure relates to involvement with terrorism or terrorist property, pursuant to the Terrorism Law. Such a report shall not be treated as a breach of confidence or of any restriction upon the disclosure of information imposed by any enactment or otherwise.

17.4. Foreign Corrupt Practices Act

The General Partner, KUE, its subsidiaries and joint ventures intend to comply with applicable provisions of the Foreign Corrupt Practices Act ("FCPA") in connection with their business activities worldwide. The FCPA prohibits corrupt payments to foreign officials (including any officer or employee of a foreign government, a public international organization, or any department or agency thereof, or any person acting in an official capacity, regardless of rank or position), parties or candidates to obtain or retain business or securing any improper advantage and the FCPA prohibits paying, offering, promising to pay, directly or indirectly, money or anything of value in connection therewith.

Investors will be required to provide information on whether they are foreign officials, and confirm that they have not paid, offered to pay or promised to pay and do not intend to pay, offer to pay or promise to pay, directly or indirectly, money or anything of value to any foreign official, party or candidate to obtain or retain business (whether with a government or agency or instrumentality thereof or otherwise) for or on behalf of KUE, its subsidiaries or joint ventures or to secure an improper advantage for KUE or its subsidiaries or joint ventures in any country.

18. CERTAIN INCOME TAX CONSEQUENCES

The following summary of the taxation of KUE and the taxation of the Partners of KUE is based upon current law and does not purport to be a comprehensive discussion of all the tax considerations that may be relevant to a decision to purchase Units. Legislative, judicial or administrative changes may be forthcoming that could affect this summary.

TO ENSURE COMPLIANCE WITH U.S. TREASURY DEPARTMENT REGULATIONS, WE ADVISE YOU THAT: (i) ANY DISCUSSION OF U.S. FEDERAL TAX ISSUES CONTAINED HEREIN IS NOT INTENDED OR WRITTEN TO BE RELIED UPON, AND CANNOT BE RELIED UPON, BY INVESTORS FOR THE PURPOSE OF AVOIDING TAX-RELATED PENALTIES UNDER THE U.S. INTERNAL REVENUE CODE OR APPLICABLE STATE OR LOCAL TAX LAW PROVISIONS; (ii) SUCH DISCUSSION IS BEING USED IN CONNECTION WITH THE PROMOTION OR MARKETING (WITHIN THE MEANING OF TREASURY REGULATIONS) BY THE COMPANY OF THE TRANSACTIONS OR MATTERS ADDRESSED HEREIN; (iii) INVESTORS SHOULD SEEK ADVICE BASED ON THEIR PARTICULAR CIRCUMSTANCES FROM AN INDEPENDENT TAX ADVISOR.

PROSPECTIVE INVESTORS (INCLUDING ALL NON-U.S. PERSONS AS DEFINED BELOW) SHOULD CONSULT THEIR TAX ADVISORS CONCERNING THE U.S. FEDERAL, STATE, LOCAL, AND FOREIGN TAX CONSEQUENCES OF OWNING COMMON LP UNITS UNDER THE LAWS OF THEIR COUNTRIES OF CITIZENSHIP, RESIDENCE, ORDINARY RESIDENCE, OR DOMICILE.

18.1. Cayman Taxation

There is, at present, no direct taxation in the Cayman Islands. The Government of the Cayman Islands, will not, under existing legislation, impose any income, corporate or capital gains tax, estate duty, inheritance tax, gift tax, or withholding tax upon KUE, its partners, the General Partner, or its shareholders. Similarly interest, dividends and gains payable to KUE and all distributions by KUE to its partners will be received free of any Cayman Islands income or withholding taxes.

KUE has registered as an exempted limited partnership under Cayman Islands law and KUE has received an undertaking from the Governor-in-Cabinet of the Cayman Islands to the effect that, for a period of 50 years from the date of the undertaking, no law which is enacted in the Cayman Islands imposing any tax to be levied on profits or income or gains or appreciations shall apply to KUE or to any partner of KUE in respect of the operations or assets of KUE or the interest of a partner in KUE; and may further provide that any such taxes or any tax in the nature of estate duty or inheritance tax shall not be payable in respect of the obligations of KUE or the interests of the partners in KUE.

The General Partner of KUE has registered as an exempted company under Cayman Islands law and the General Partner has received an undertaking from the Governor-in-Cabinet of the Cayman Islands that, in accordance with section 6 of the Tax Concessions Law (1999 Revision) of the Cayman Islands, for a period of 20 years from the date of the undertaking, no law which is enacted in the Cayman Islands imposing any tax to be levied on profits, income, gains or appreciations or which is in the nature of estate duty or inheritance tax shall be payable (i) on the shares of the General Partner or (ii) by way of the withholding in whole or in part of a payment of dividend or other distribution of income or capital by the General Partner to its shareholders.

The Cayman Islands does not have a double tax treaty with the United States or any other country.

18.2. United States Federal Income Taxation

The following summary sets forth the material U.S. federal income tax considerations related to the purchase, ownership, and disposition of Common LP Units. Unless otherwise stated, this summary deals only with partners that are U.S. Persons (as defined below) who purchase their Common LP Units in this offering and who hold their Common LP Units as capital assets within the meaning of Section 1221 of the Code. The following discussion is only a discussion of the material U.S. federal income tax matters as described herein and does not purport to address all of the U.S. federal income tax consequences that may be relevant to a particular Limited Partner of KUE ("Limited Partner") in light of such Limited Partner's specific circumstances. In addition, except as expressly stated, the following summary does not address the U.S. federal income tax consequences that may be relevant to special classes of Limited Partners who may be subject to special rules or treatment under the Code, such as financial institutions, insurance companies, regulated investment companies, real estate investment trusts, partnerships, or other pass-through entities, dealers or traders in securities, tax-exempt organizations, expatriates, any person who owns or is deemed to own, for U.S. federal income tax purpose, 10% or more of the total combined voting power of all classes of voting stock of the corporate subsidiaries of KUE, persons that have a "functional currency" other than the United States dollar, and any individual who is a non-U.S. Person (as defined below) and who is present in the U.S. for 183 days or more in a taxable year. This discussion does not include any description of the tax laws of any state or local governments within the U.S. No ruling has been or will be sought from the IRS regarding any matter discussed herein. Counsel to KUE has not rendered any legal opinion regarding any tax consequences relating to KUE or an investment in KUE. No assurance can be given that the IRS would not assert, or that a court would not sustain, a position contrary to any of the positions taken by KUE as set forth below.

For purposes of this discussion, the term "U.S. Person" means (1) a citizen or resident of the U.S., (2) a corporation created or organized in or under the laws of any State of the U.S. (including the District of Columbia), (3) an estate the income of which is subject to U.S. federal income taxation regardless of its source, (4) a trust if either (a) a court within the U.S. is able to exercise primary supervision over the administration of such trust and one or more U.S. Persons have the authority to control all substantial decisions of such trust or (b) the trust has a valid election in effect to be treated as a U.S. Person for U.S. federal income tax purposes, or (5) any other person or entity that is treated for U.S. federal income tax purposes as if it were one of the foregoing. The term "non-U.S. Person" means any person other than a U.S. Person.

18.2.1 United States Federal Income Taxation of KUE and its Subsidiaries

Partnership Status of KUE. KUE believes that it should be classified as a partnership for United States federal income tax purposes. Accordingly, KUE is not a taxable entity and incurs no U.S. federal income tax liability. Instead, each Partner will be allocated its share of KUE's income or loss, as the case may be, for United States federal income tax purposes as set forth in the Limited Partnership Agreement. In addition, each U.S. Partner's share of income or loss from KUE generally will be required to be includable in income for state and local tax purposes in the jurisdiction in which the investor is a resident and in the jurisdictions in which KUE operates. Each U.S. Partner will be responsible for paying the income tax on that portion of KUE's income allocated to such investor. No assurances can be given that any cash distribution will be made from KUE to the partners to pay such income tax liabilities.

Under the Code, certain non-U.S corporations may be treated as U.S. corporations for U.S. federal income tax purposes, thereby subjecting such non-U.S. corporations to U.S. federal income tax on their income. Recently enacted U.S. tax legislation includes one such provision. Under this legislation, referred to as the anti-inversion legislation, non-U.S. corporations that acquire interests in a U.S. corporation or partnership and meet certain ownership, operational and other tests may be treated as U.S. corporations for federal income tax purposes. The legislation grants broad regulatory authority to the U.S. Secretary of Treasury to provide such regulations as may be appropriate to determine whether a non-U.S. corporation is treated as a U.S. corporation or as are necessary to carry out the intent of the provision, including adjusting its application as necessary to prevent the avoidance of its purpose. Recently issued

Treasury regulations provide that the anti-inversion legislation is applicable to a foreign partnership that is or becomes a "publicly traded partnership" within two years of the acquisition by it of a U.S. corporation. A "publicly traded partnership" is any partnership (i) interests in which are traded on an established securities market, or (ii) interests in which are readily tradable on a secondary market (or the substantial equivalent thereof). KUE believes that it is not currently a publicly traded partnership and does not intend to become a publicly traded partnership within two years of this offering or the acquisition of KLC and *k*12. As a result, KUE does not believe the anti-inversion legislation or any regulations promulgated within the scope of the legislation's regulatory authority should apply to KUE although no assurance can be given in this regard or with respect to any new acquisitions of or investment in U.S. corporations. In addition, KUE does not believe that any other Code provision subjecting non-U.S. corporations to U.S. federal income tax should apply to KUE or its subsidiaries, although no assurance can be given in this regards. The promulgation of contrary regulations or a successful challenge of either of these positions by the Internal Revenue Service could materially reduce a holder's after-tax return and, thus, could result in a substantial reduction of the value of the Units.

The remainder of this section assumes that KUE will be treated as a partnership for U.S. federal income tax purposes.

18.2.2 United States Federal Income Taxation of Partners

U.S. Persons

Allocation of Purchase Price. You will be treated as purchasing a Unit consisting of two components, one Common LP Unit and one GP Share. Your purchase price for each Unit will be allocated between one Common LP Unit and one GP Share in proportion to their relative fair market values at the time of your purchase, and this allocation will establish your initial tax basis in both your ownership interest in the Common LP Unit and your GP Share. We will treat the fair market value of each Common LP Share at $999 and the fair market value of each GP Share as $1.

Flow-Through of Taxable Income. KUE will not pay any U.S. federal income tax. Instead, each Partner will be required to report on its income tax return its allocable share (as determined pursuant to the Limited Partnership Agreement) of KUE's income, gains, losses, and deductions without regard to whether corresponding cash distributions are made. The Limited Partnership Agreement authorizes the General Partner to override the allocation provisions of the Limited Partnership Agreement and allocate income, gains, losses and deductions of KUE to the Partners in a manner that achieves the desired economic arrangement of KUE, which is to return each Partner's capital contribution and then for all Partners (including the holder of Profits Participation LP Units) to share in the profits of KUE in proportion to the number of Units held by them.

The IRS may challenge the manner in which income, gains, losses and deductions are allocated to holders of Common LP Units, the General Partner and holders of the Profits Participation LP Units under the Limited Partnership Agreement. For U.S. federal income tax purposes, allocation of any item of income, gain, loss or deduction to a partner in a partnership will be given effect so long as the allocation has "substantial economic effect," or is otherwise in accordance with the partner's interest in the partnership. If an allocation of an item pursuant to the Limited Partnership Agreement does not satisfy this standard or is deemed not to satisfy this standard by the IRS, it will be reallocated by the IRS among the Partners on the basis of their respective interests in KUE (as determined by the IRS), taking into account all facts and circumstances. In such a case, holders of Common LP Units could have additional tax liabilities or suffer adverse tax consequences.

Treatment of Cash Distributions. KUE's distributions to a Partner generally will not be taxable to the Partner for U.S. federal income tax purposes to the extent of such Partner's adjusted tax basis in its Common LP Units immediately before the distribution. Cash distributions in excess of a Limited Partner's adjusted tax basis generally will be considered to be gain from the sale or exchange of the Common LP Units. Any reduction in a Limited Partner's share of KUE's liabilities, if any, for which no Partner bears the economic risk of loss, known as "nonrecourse liabilities," will be treated as a deemed distribution of cash to that Partner. A decrease in a Partner's percentage interest in KUE because of KUE's issuance of additional limited partner units ("Limited Partner Units") would decrease such Partner's share of Company nonrecourse liabilities, if any, and thus would result in a corresponding deemed distribution of cash.

Treatment of In-Kind Distributions. KUE's distribution of property (other than cash) to a Partner generally will not be taxable to the Partner unless the property is a "marketable security" and the exceptions to the requirement for recognition of gain upon distributions of marketable securities do not apply. Marketable securities, for these purposes, include actively traded securities or equity interests in another entity that are readily convertible into or exchangeable for cash or other marketable securities. If the distributed property constitutes a marketable security, the property would be treated as cash and the Partner would recognize gain, but not loss, to the extent described above.

Basis of Common LP Units. A Limited Partner will have an initial tax basis for its Common LP Units equal to the amount it paid for the Common LP Units plus its share of Company nonrecourse liabilities, if any. That basis will be increased by the Limited Partner's share of Company income and by any increases in its share of Company nonrecourse liabilities, if any. That basis will be decreased, but not below zero, by distributions from KUE, by the Limited Partner's share of KUE losses, by any decrease in its share of Company nonrecourse liabilities, if any, and by its share of Company expenditures that are not deductible in computing KUE's taxable income and are not required to be capitalized.

Limitations on Deductibility of Company Losses. The deduction by a Limited Partner of its share of Company losses will be limited to the adjusted tax basis in its Common LP Units. Limited Partners should be aware that they could be subject to various other limitations on their ability to deduct their allocable shares of Company losses (or items of deductions). Such limitations include, but are not limited to, those relating to "investment interest" expense under Section 163(d) of the Code, "miscellaneous itemized deductions" under Section 67 of the Code, certain other itemized deductions of high income individuals under Section 68 of the Code, the "at risk" rules under Section 465 of the Code, and the deductibility of capital losses under the Code. Prospective investors should consult their tax advisors with respect to the potential application of such rules to their particular situation.

Allocation of Income, Gain, Loss, and Deduction. If KUE has a net profit or net loss, its items of income, gain, loss, and deduction will be allocated among the Partners in accordance with the provisions of the Limited Partnership Agreement.

Dispositions of Common LP Units – Recognition of Gain or Loss. A Limited Partner will recognize gain or loss on a sale of Common LP Units equal to the difference between the amount realized and the Limited Partner's adjusted tax basis for the Common LP Units sold. A Limited Partner's amount realized will be measured by the sum of cash or the fair market value of other property received plus its share of Company nonrecourse liabilities, if any. Generally, gain or loss recognized by a Limited Partner on the sale or exchange of Common LP Units will be taxable as capital gain or loss and as long-term capital gain or loss if the Common LP Units were held for more than twelve months.

Non-U.S. Persons

Withholding. Ownership of Common LP Units by non-U.S. Persons raises special U.S. federal income tax considerations. To the extent that KUE receives dividends from a U.S. subsidiary, distributions of such dividend income to Limited Partners who are non-U.S. Persons will be subject to U.S. withholding at a rate of 30%. Certain countries have tax treaties with the U.S. that reduce or eliminate the withholding requirement. To the extent that KUE receives dividends from a non-U.S. subsidiary, distributions of such dividend income to Limited Partners who are non-U.S. Persons will not be subject to U.S. tax, unless such income were deemed to be effectively connected with a trade or business conducted by KUE in the U.S. KUE will be required to pay withholding tax with respect to the portion of KUE's income that is "effectively connected" with the conduct of a U.S. trade or business and which is allocable to non-U.S. Persons. Any amounts KUE is required to remit to taxing authorities will be treated as a distribution to the Partner on whose behalf the withholding is being paid and will be charged against current and/or future distributions such Partner would otherwise be entitled to. If KUE is required to withhold on amounts in excess of cash distributions, Partners shall be required to contribute to KUE cash in an amount by which such required withholding exceeds any such distributions.

Gain on Sale. A Limited Partner that is a non-U.S. Person will be subject to U.S. federal income tax upon the sale or exchange of its Common LP Units to the extent that such Limited Partner recognizes gain upon such sale or exchange and such gain is effectively connected with a U.S. trade or business.

U.S. Real Property Holding Corporation. If a direct U.S. subsidiary of KUE is or were to become a "United States Real Property Holding Corporation," or "USRPHC" (as defined below), certain disposition of Common LP Units by a Limited Partner that is a non-U.S. Person would result in such Limited Partner being subject to U.S. federal income tax in respect of the portion of the gain recognized on such disposition that is attributable to such subsidiary. In addition, if a direct U.S. subsidiary of KUE is or were to become a USRPHC, certain dispositions of such subsidiary by KUE would result in Limited Partners who are non-U.S. Persons being subject to U.S. federal income tax in respect of their allocable share of the gain recognized by KUE on such disposition. Generally, a corporation is a USRPHC if the fair market value of its "U.S. real property interests" equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests and its other assets used or held for use in a trade or business. KUE believes that each of its direct U.S. subsidiaries is not currently a USRPHC for U.S. federal income tax purposes. However, no assurances can be given in this regard. Furthermore, it is possible that in the future one of KUE's subsidiaries may become a USRPHC if, for example, the value of the U.S. real estate holdings of such subsidiary increases sufficiently. Limited Partners that are non-U.S. Persons are urged to consult their tax advisors regarding the potential application of the USRPHC rules to their investment in KUE.

Administrative Matters

Backup Withholding. For each calendar year, KUE will report to its U.S. Partners and to the Internal Revenue Service the amount of distributions that it pays, and the amount of tax (if any) that it withholds on these distributions. Under the backup withholding rules, a U.S. Limited Partner may be subject to backup withholding tax with respect to distributions unless a Limited Partner: (i) is a corporation or comes within another exempt category and demonstrates this fact when required or (ii) provides a taxpayer identification number, certifies as to no loss of exemption from backup withholding tax and otherwise complies with the applicable requirements of the backup withholding tax rules. Exempt Limited Partners who are U.S. Persons should indicate their exempt status on a properly completed IRS Form W-8BEN. Backup withholding is not an additional tax, the amount of any backup withholding from a payment to a Limited Partner will be allowed as a credit against such Limited Partner's U.S. federal income tax liability.

Nominee Reporting. Persons who hold an interest in KUE as a nominee for another Person are required to furnish to KUE:

(a) the name, address, and taxpayer identification number of the beneficial owner and the nominee,

(b) whether the beneficial owner is:

  (1) a person that is not a U.S. Person,

  (2) a foreign government, an international organization, or any wholly-owned agency or instrumentality of either of the foregoing, or

  (3) a tax-exempt entity;

(c) the amount and description of the Limited Partner Units held, acquired, or transferred for the beneficial owner, and

(d) specific information including the dates of acquisitions and transfers, means of acquisitions and transfers, and acquisition cost for purchases, as well as the amount of net proceeds from sales.

Filing Requirements. Limited Partners who are U.S. Persons will be required to file an IRS Form 8865 with the Partner's U.S. Federal Income tax return for the taxable year in which the Limited Partner purchases the Common LP Units. Investors who are U.S. Persons may, depending upon the size of their investment in the General Partner, be required to file an IRS Form 5471 with the investor's U.S. federal income tax return for the taxable year in which the investor purchases Common LP ordinary shares in the General Partner. Additionally, depending on the type of non-U.S. investments KUE makes, investors who are U.S. Persons may be required to file additional IRS Forms such as a Form 5471 in subsequent years.

This discussion of tax consequences and tax withholding is a general discussion and is not intended to be all inclusive nor a substitute for careful tax planning. Accordingly, each prospective purchaser of Common LP Units is urged to consult with their own tax advisors with specific reference to their own tax situation.

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19.1. Appendix A: Detailed Biographies

KUE Management

At the conclusion of this offering, the KUE management team will consist of the following individuals.

Principals

Michael Milken, Co-Founder and Chairman

Mr. Milken is Co-Founder and Chairman of KUE. One of America's leading philanthropists, he was called "The Man Who Changed Medicine" in a Fortune magazine cover story that chronicled his three decades of efforts to accelerate medical solutions. He Co-Founded the Milken Family Foundation in 1982 to advance programs in medical research and education. In 1993, Mr. Milken expanded his medical philanthropy by launching the Prostate Cancer Foundation, the world's largest private source of funding for research on that disease. A decade later, he concluded that progress wasn't coming fast enough, so he founded FasterCures, which seeks to shorten the path to breakthroughs for all deadly diseases. Mr. Milken also chairs the Milken Institute, a think tank who conferences feature opinion leaders and government officials from around the world. Among the many awards Mr. Milken has received is the Marcus Garvey Award for major contributions to the formation and inspiration of African-American businesses. He earned his bachelor's degree at the University of California at Berkeley, and his MBA from the University of Pennsylvania's Wharton School.

Steven Green, Vice Chairman

Steven Green, who served as the 12th U.S. Ambassador to the Republic of Singapore from 1997 to 2001, is Vice Chairman of KUE and Chairman and CEO of Greenstreet Real Estate Partners, a professional real estate firm. Ambassador Green previously served as Chairman and CEO of Samsonite Corporation, which was the major operating subsidiary of Astrum International Corporation. As Chairman of Astrum, Ambassador Green spearheaded the operating company's expansion into emerging markets in Eastern Europe, the CIS, Asia and the Middle East. In 1992, he opened the first American retailing center on Red Square. In 1995, President Clinton appointed him to the President's Export Council, where he served on the Executive Committee and chaired the Strategic Communications Committee. Ambassador Green is also Chairman and Chief Executive Officer of K1 Ventures Limited, a publicly traded investment company in Singapore, and is a board member of Greenstreet Realty, a company that manages a large portfolio of education-related real estate. In addition to his corporate responsibilities, he has been active in U.S. civic affairs, serving as a contributing trustee and director for a number of community and national organizations, including the University of Miami, the U.S. Chamber of Commerce and serves as Honorary Consul General of Singapore in Miami, Florida. The Green Family Foundation endows special projects in community and national service.

Lowell Milken, Co-Founder, President and Chief Executive Officer

Lowell Milken is President and Chief Executive Officer of KUE. He is also Chairman of London-based Heron International, a worldwide leader in property development and investment; Chairman of KU Education, Inc., a leading company in ECE and K-9 educational programs and services; and Chairman and Co-Founder of the Milken Family Foundation. Under his leadership, the Milken Family Foundation has become one of the most innovative private foundations in the U.S., developing groundbreaking programs in K-12 education. Mr. Milken created the Foundation's National Educator Award program, which today is the largest teacher-recognition program in the U.S. Dubbed the "Oscars of Teaching" by Teacher Magazine, it has awarded more than $50 million to honor more than 2,100 K-12 teachers and principals. Mr. Milken also launched the Teacher Advancement Program ("TAP") in 1999 as a comprehensive school reform to attract, develop, motivate and retain high quality teachers for America's schools. Today TAP schools are operating in 12 states impacting thousands of teachers and ten of thousands of students. Mr. Milken serves as Chairman of the Institute for Excellence in Teaching which among its many activities is the operation of the Teacher Advancement Program. Widely known as an educational pioneer and innovator, Mr. Milken has been recognized by numerous awards from such organizations as the National Association of State Boards of Education, the Horace Mann League, and the National Association of Secondary School Principals. Mr. Milken earned his bachelor's degree from the University of California at Berkeley, and his law degree from the University of California, Los Angeles.

Other Executives

Ted Sanders, Vice Chairman

Ted Sanders is Vice Chairman of KUE, as well as the Executive Chairman of Cardean Learning Group, which develops online post-secondary education and degree programs. Mr. Sanders previously served as the President of the Education Commission of the States and as Deputy U.S. Secretary of Education under President George H.W. Bush. He has been the Chief State School Officer in three U.S. states (Nevada, Illinois and Ohio) and University President at Southern Illinois University. He serves as an advisor to the School Evaluation Services Division of Standard and Poor's, the PDK Gallup Poll, MetaMetrics Inc., and the Government Accountability Office. He holds a doctor of education degree in educational administration and higher education from the University of Nevada at Reno.

Stephen Goldsmith, Senior Vice President, Strategic Planning and Worldwide Government Programs

Stephen Goldsmith is the Senior Vice President of Strategic Planning & Worldwide Government Programs for KUE. Mr. Goldsmith is also a Milken Institute Senior Fellow and the Dan Paul Professor of Government at Harvard University's Kennedy School of Government, is a nationally recognized expert on government management, reform and innovation. He is the author of several books, most recently, Governing by Network: The New Face of the Public Sector, and his columns have frequently been published in such papers as The Wall Street Journal and The New York Times. While serving two terms as Mayor of Indianapolis, he earned a national reputation for innovations in government as he reduced the city's bureaucracy, taxes, and counter-productive regulations, all while identifying more than $400 million in savings, which he then reinvested in a transformation of downtown Indianapolis and its urban neighborhoods. His work in Indianapolis has been cited as a national model. Prior to his two terms as Mayor, he was Marion County District Attorney for 12 years. Mr. Goldsmith formerly served as Special Advisor to President Bush, and Chief Domestic Policy advisor to President Bush in the 2000 presidential campaign.

Nina Shokraii Rees, Senior Vice President, Strategic Initiatives

Nina Rees is Senior Vice President of Strategic Initiatives for KUE, where she is responsible for furthering the company's goals of providing the highest-quality and most effective early childhood education and on finding innovative ways to improve K-12 educational outcomes. Before joining KUE, Ms. Rees had nearly 15 years of relevant experience in Washington, D.C., most recently as the Assistant Deputy Secretary for Innovation and Improvement at the U.S. Department of Education. In this post, she oversaw the administration of 28 grant programs and coordinated the implementation of several provisions of the No Child Left Behind Act. Prior to joining the Education Department, Ms. Rees served as a Domestic-Policy Adviser to Vice President Dick Cheney, and was involved in the effort to enact No Child Left Behind. She also served as the Senior Education Analyst at the Heritage Foundation. Ms. Rees spent two years on the staff of Rep. Porter Goss, R-Florida., while earning her master's degree in international transactions from George Mason University, and received her bachelor's degree in psychology from Virginia Polytechnic Institute and State University. Ms. Rees is fluent in French and Persian.

Jeffrey Safchik, Chief Financial Officer

Jeffrey Safchik is the Chief Financial Officer of KUE. Mr. Safchik is also Managing Director and Chief Financial Officer of Greenstreet Real Estate Partners and also is one of its founders. He serves in a similar capacity for all the Greenstreet financial companies. Mr. Safchik is also Chief Operating Officer and Chief Financial Officer of k1Ventures, a publicly traded Singapore-based investment company. Previously, Mr. Safchik was CFO of a real-estate company that managed more than 11 million square feet of retail and commercial property across the U.S. He has served as CFO for a billion-dollar retailer, where he managed the company's financial affairs and was directly involved in its restructuring and strategic planning. Mr. Safchik graduated from Pace University in New York, received his master's degree in taxation from St. John's University, and has attended advanced finance and real estate courses at the Massachusetts Institute of Technology and New York University. He serves as a Trustee for the Green Family Foundation, is Chairman of the University of Miami Department of Pediatrics Children's Council and is active in a number of charities including the Marian Center for Under-privileged Children and the United Way.

Richard Sandler, General Counsel

Richard Sandler is General Counsel for KUE. Mr. Sandler is also Executive Vice President of the Milken Family Foundation and has been involved with the Foundation since its inception. A shareholder in the law firm of Maron & Sandler, he has practiced law since 1973, and specializes in real estate transactions and general securities and business law. He has also been involved since 1983 in consulting with respect to business acquisitions. Mr. Sandler is a member of the State Bar of California and has served on various boards of educational and philanthropic institutions, including the Executive Board of Heal L.A., as a Trustee of Brentwood School, and on the Board of the Foundations of the Milken Families. Mr. Sandler received a bachelor's degree from the University of California, Berkeley, and his juris doctorate degree from the UCLA School of Law.

Adam Cohn, Senior Vice President, Business Development

Adam Cohn is Senior Vice President of Business Development at KUE where he is responsible for investments, financings and business development for Knowledge Universe and its portfolio companies. Mr. Cohn has been at KUE, or related entities, since March of 2000. He has overseen the acquisitions and related financings of KinderCare Learning Centers Inc. and Aramark Educational Resources by Knowledge Learning Corporation. Previously, Mr. Cohn was with Whitney & Co., a leading private equity firm. Prior to Whitney & Co., Mr. Cohn was an investment banker in the Financial Sponsors Group at Bankers Trust Company and Deutsche Bank. Mr. Cohn serves on several private and public company board of directors. Mr. Cohn has a BS in Business from Skidmore College and a MBA from Columbia University.

Geoffrey Moore, Senior Vice President, Corporate Communications

Geoffrey Moore is Senior Vice President of Communications at KUE. He has also provided communications counsel to FasterCures, the Milken Institute, the Prostate Cancer Foundation and related organizations for several years. Prior to joining Knowledge Universe in 1998, Mr. Moore was Senior Vice President of Strategic Communications for Dow Jones Markets, a unit of Dow Jones, publisher of The Wall Street Journal. He served for 22 years in a wide range of communications management and speechwriting positions for IBM in the U.S. and Japan. Earlier, he was an Assistant to New York Governor Nelson Rockefeller, Press Secretary to U.S. Senate Minority Leader Hugh Scott, and Director of Public Information for the U.S. Equal Employment Opportunity Commission. His opinion articles have been published in The New York Times and other major publications. He graduated with a degree in political science from the University of Pennsylvania and studied law and public policy at that university's law school.

Michael Neumann, Vice President, Business Development

Michael Neumann is a Vice President of Business Development at KUE, where he works on investments, financings and business development for Knowledge Universe and its portfolio companies. Mr. Neumann has been at KUE, or related entities, since 2002. He has worked on the acquisitions and related financings of KinderCare Learning Centers Inc. and Aramark Educational Resources by Knowledge

Learning Corporation. Previously, Mr. Neumann was with TCW / Crescent Mezzanine where he completed mezzanine financings primarily for leveraged buyout transactions. Prior thereto, Mr. Neumann worked in the investment banking division of Deutsche Bank (Bankers Trust) in the Financial Sponsors Group. Mr. Neumann earned a Bachelors of Business Administration from the University of Notre Dame.

KUE Advisory Board

Les Biller

Leslie Biller is retired Vice Chairman & Chief Operating Officer of Wells Fargo & Company. Mr. Biller joined Wells Fargo in 1998, when it merged with Norwest Corporation. Prior to that, he spent nearly 11 years at Norwest, where he held various executive positions including Executive Vice President and head of Strategic Planning and Acquisitions, Executive Vice President and head of the company's South Central Community Banking operations, and President and Chief Operating Officer. Before joining Norwest, he was Executive Vice President and head of Consumer Markets at Bank of America, based in San Francisco. Mr. Biller joined Bank of America in 1985 as the Senior Vice President of International Consumer Markets. Prior to that, he was with Citicorp for 12 years, where he was a Regional Business Manager, U.K. Region; and Vice President and Business Manager, Italy. Mr. Biller serves on the Board of Directors of Ecolab Inc., and is a director of the Los Angeles Urban League, the Autry Museum of Western Heritage, and is a Founders Circle member of the Fulfillment Fund. He earned his MBA from Xavier University in Cincinnati, Ohio, and holds a bachelor's degree in chemical engineering from City College of New York.

Ted Mitchell

Ted Mitchell was recently named CEO of the New Schools Venture Fund after having served on the New Schools Board of Directors for seven years. Mr. Mitchell previously served as president of Occidental College for six years. Immediately prior to Occidental, he served as Vice President for Education and Strategic Initiatives of the J. Paul Getty Trust. He was also the Deputy to the President at Stanford University, Vice Chancellor at UCLA, and a Professor of Education at Dartmouth. Mr. Mitchell is an Education Advisor to California Senator Dianne Feinstein and served as a Senior Education Advisor to Los Angeles Mayor Richard Riordan.

Tsvi Gal

As Chief Technology Officer for Deutsche Bank Asset Management ("Deutsche Bank"), Tsvi Gal is responsible for constructing an industry leading, state of the art, evolutionary architecture which has competitively positioned Deutsche Bank for future growth through innovation, processing scale and efficiency. Prior to joining Deutsche Bank, Mr. Gal was responsible for overseeing global IT operations at Warner Music Group ("WMG"), formerly part of the Time Warner family of operations and now a privately-held multinational music and publishing company. He lent his considerable global technical expertise to the task of integrating WMG's global systems and exploring technological synergies, as well as maximizing the opportunities presented by new technologies. Prior to joining WMG, Mr. Gal held the role of president of AT&T's ATT.COM from 2000 to 2002, where he was responsible for AT&T's E*Business and E*commerce activities. In this position, he oversaw the revitalization of AT&T's presence in the market ensuring its transition into a modern era electronic business market leader. Earlier, Mr. Gal was the Chief Technology Officer for Enterprise Technology services at Merrill Lynch & Company, where he helped build the electronic trading system. From 1996 to 1999, he was Executive Vice President and CIO of North America Applications ABN AMRO Bank, one of the world's largest global banks. Mr. Gal is a computer-science graduate of Rutgers University, and holds an MBA from Golden Gate University.

KLC Management

KLC
Key Management

Name	Position	Years with Company	Industry Exp.
Elanna Yalow	President and COO	16	19
Dan Jackson	CFO	9	9
Toni Jaffe	SVP of Human Resources	1	1
Eva Kripalani	SVP & General Counsel	9	9
Marcy Suntken	SVP of School Partnerships	14	20
Dan Frechtling	SVP of Business Development	1	1
Sharon Bergen	SVP of Education and Training	18	18
Steve Brown	President, KCDL	1	1
Total		69	78
Average		8.6	9.7

Elanna Yalow, Ph.D., President and Chief Operating Officer

Dr. Yalow has been President and Chief Operating Officer of KLC since January 1996, having joined the company in 1989 to initiate development of the employer-sponsored services division. Currently, Dr. Yalow is responsible for supervising all center operations and support functions. Her educational degrees include a Ph.D. in educational psychology from Stanford University School of Education in 1980 with an emphasis on the design and evaluation of educational programs for children as well as an M.B.A. from Stanford University's Graduate School of Business in 1989. With a background in educational research and development, Dr. Yalow contributed to numerous statewide and national curriculum development and assessment projects. Dr. Yalow has written extensively on matters related to the education of young children.

Mark Moreland, Executive Vice President, Finance and Chief Financial Officer

Mr. Moreland is Executive Vice President and Chief Financial Officer of Knowledge Learning Corporation (KLC). Mr. Moreland joined KLC during 2006. Prior to joining KLC, Mr. Moreland was Interim CFO with Movie Gallery, Inc.; the $2.6 billion holding company of the Movie Gallery and Hollywood Video movie rental stores with 4,700 stores nationwide. Before being appointed interim CFO, Mr. Moreland served as Senior Vice President, Finance and Treasurer. Before joining Movie Gallery, he was with Kmart Corporation in both merchandising finance and treasury capacities, last holding the role of Divisional Vice President, Assistant Treasurer. Mr. Moreland has also worked with Deloitte Consulting, Blue Shield of California and the U.S. General Accounting Office. Mr. Moreland earned an MBA from the University of Michigan and a B.S. in Economics from the University of Texas at Arlington.

Eva Kripalani, Senior Vice President and General Counsel

Ms. Kripalani became KLC's Senior Vice President and General Counsel in January 2005. Prior to that, Ms. Kripalani served as Senior Vice President, General Counsel and Secretary of KinderCare since July 2001. She joined KinderCare in July 1997 as Vice President, General Counsel and Secretary. Prior to joining KinderCare, Ms. Kripalani was a partner in the law firm of Stoel Rives LLP in Portland, Oregon, where she had worked since 1987. Ms. Kripalani received her J.D., magna cum laude, from the

Willamette University College of Law in 1986 and her B.S. in Finance-Law, magna cum laude, from Portland State University in 1983.

Dan Frechtling, Senior Vice President, Marketing and Business Development

Mr. Frechtling was named Senior Vice President, Marketing and Business Development in 2005. Prior to joining KLC, Mr. Frechtling served as Vice President, Strategy and Business Development and Director, Marketing at Mattel. He was Vice President, Corporate Development at Stamps.com and Senior Associate at McKinsey & Company. He serves on the board for the Portland-Suzhou Sister City Association. Mr. Frechtling graduated from Northwestern University in 1993 and earned his MBA from Harvard Business School in 1997.

Sharon Bergen, Senior Vice President, Education and Training

Ms. Bergen joined KLC in 1997 and has held several progressively responsible positions in the Education and Training Department until her promotion to Vice President in 2002 and her current position in 2005. As Senior Vice President of Education and Training, Ms. Bergen oversees company-wide curriculum program development, implementation and training activities. Ms. Bergen earned a B.S. in Child Development from Minnesota State University and an M.A. in Early Childhood Education from Concordia University. Her career includes a rich variety of professional experiences in the early childhood field including prior work with several child care companies and non-profit agencies. She is a member of numerous educational organizations, including the National Association for the Education of Young Children (NAEYC) and the American Society of Training and Development (ASTD), and serves on a variety of advisory councils, task forces and committees within the early childhood profession.

Real Estate Management Team / Greenstreet Real Estate Partners

Steven Green, Chairman and Chief Executive Officer
See KUE Advisory Board section for complete biography

Jeffrey Safchik, Chief Operating Officer and Chief Financial Officer
See KUE Advisory Board section for complete biography

Steven Cox, Executive Vice President, Real Estate
Mr. Cox has over 25 years of real estate development, investment, and asset management experience. Prior to joining Greenstreet, Mr. Cox was Managing Principal of Tishman Heskin Partners. Tishman Heskin is a national real estate investment and asset management firm focused upon opportunistic acquisitions of real estate and loan assets. At Tishman Heskin, Mr. Cox's activities included all aspects of strategic direction, market analysis, acquisition, positioning / re-positioning, leasing, and disposition of over $245 million of real estate nationwide. Since 1992, during Mr. Cox's term at Tishman Heskin Partners, the company consistently delivered above average returns to its investors, many of whom were offshore private clients. His experience in co-investing as a principal with globally oriented private clients provides Mr. Cox with a firm understanding of his primary role of investment origination on behalf of GCP. Prior associations include the Heskin Group, Towle Heskin Partners, Heskin Signet Partners and TCF Service and Mortgage Corporation. In 1986, as a founding member and principal of the Heskin Group (the managing member of the Towle Heskin Partners and Heskin Signet Partners), Mr. Cox oversaw the asset management direction and disposition of over $1 billion in real estate and loan assets together with financial and sale advisory assignments covering assets in excess of $2 billion in book value. Mr. Cox holds a B.S.B. in Finance with additional studies in Economics from the University of Minnesota.

KSI Board of Directors

Les Biller, Director

See KUE Advisory Board section for complete biography.

Ralph Finerman, Director

Mr. Finerman became a director of KLC in 1999. Mr. Finerman is the President of RFG Financial Group, Inc., a position he has held since 1994. Mr. Finerman is a CPA and an attorney and practiced in New York prior to forming RFG Financial Group, Inc. in 1994. Mr. Finerman also serves as a director of Nextera Enterprises, Inc. and as an officer or director of other privately-held affiliates of KLC and Krest LLC.

Stephen Goldsmith, Director

See KUE Management section for complete biography.

Steven Green, Director

See KUE Management section for complete biography.

Stanley E. Maron, Director

Mr. Maron became a director of KLC in 2004. Mr. Maron is a senior shareholder in the law firm of Maron & Sandler, a position he has held since September 1994. Mr. Maron is also a director of LeapFrog Enterprises, Inc. and Nextera Enterprises, Inc., and serves as an officer or director of various other privately-held affiliates of KLC and Krest LLC.

Lowell Milken, Director

See KUE Management section for complete biography.

Wendi Murdoch, Director

Wendi Murdoch is currently an advisor to News Corporation on its business development in the Asia Pacific region. Mrs. Murdoch is responsible for identifying and evaluating business opportunities in new media and the Internet, managing relationships with government organizations and officials, recruiting personnel and locating local partners. Previously, she served as the Vice President of News Corporation's Asian satellite network, the Hong Kong based Star TV. In that capacity she was instrumental in formulating STAR Sports and ESPN Asia. Mrs. Murdoch holds a Bachelors degree in economics from California State University at Northridge and an MBA from Yale University.

Jeff Safchik, Director

See KUE Management section for complete biography.

Richard Sandler, Director

See KUE Management section for complete biography.

*k*12 Management

Ron Packard, Chairman and Founder

Mr. Packard serves as Chairman of the Executive Committee of *k*12 and as acting Chief Executive Officer. Prior to co-founding *k*12 and since 1997, Mr. Packard has been an executive officer of KU Schools, whose subsidiaries and business ventures include early childhood education, charter school education, and after school programs. From 1994 to 1997, Mr. Packard served as President of Forestal Trillium Limitada, a South American company. Mr. Packard also has worked as a consultant for McKinsey & Company and a mergers and acquisitions specialist at Goldman Sachs. Mr. Packard also serves on the Advisory Board for Department of Defense Schools. Mr. Packard holds a B.S. and B.A. from the University of California at Berkeley and an M.B.A. from the University of Chicago. He is also a Chartered Financial Analyst.

John Baule, Executive Vice President of Operations and Chief Financial Officer

Mr. Baule previously served as CFO for Headstrong, a global consultancy based in Fairfax, Virginia, from 1999 to 2004. At Headstrong he was responsible for activities ranging from raising funds, to strategy, to daily process improvement on a global basis. Mr. Baule acted as Mead-Johnson's CFO in their international office in Hong Kong. Prior to Headstrong, Mr. Baule spent nine years at Bristol Myers-Squibb in a variety of international accounting and finance roles. Mr. Baule began his career at KPMG. He holds a B.B.A. in accounting from the College of William and Mary in Williamsburg, VA.

Bror Saxberg, Senior Vice President, Learning and Content

Bror Saxberg serves as Senior Vice President of Learning and Content of *k*12. From 1998 to 2000, Dr. Saxberg served as Vice President of Operations at Knowledge Testing Enterprises, a developer of Web-based assessments for IT skills, where he was responsible for technology, testing and operations. From 1995 to 1997, Dr. Saxberg served as Publisher and General Manager of DK Multimedia, and he has also worked as a consultant for McKinsey & Co. Dr. Saxberg holds a B.S. from the University of Washington, an M.A. from Oxford University, a Ph.D. from MIT and an M.D. from Harvard University.

Thomas Boysen, Senior Vice President, Chief School Officer

Mr. Boysen serves as Senior Vice President and Chief School Officer of *k*12. Previously, he was COO of the Los Angeles Unified School District. Prior to this, Mr. Boysen was State Commissioner of Education in the State of Kentucky. He has also served as superintendent of schools for the San Diego Unified and Conejo Valley Unified school districts.

Charles Zogby, Senior Vice President, Education Policy

Mr. Zogby, serves as Senior Vice President of Education Policy. Previously, he served as Secretary of Education for the Commonwealth of Pennsylvania, where he helped craft one of the most successful and comprehensive education reform agendas in modern Pennsylvania history and lead the state's development and legislative passage of the U.S.' first comprehensive cyber charter school law. Prior to his appointment, Mr. Zogby served as Pennsylvania Gov. Ridge's policy director, where he was responsible for coordinating policy development and initiatives across 18 executive branch agencies. Mr. Zogby earned a bachelor's degree in economics from St. Lawrence University and his law degree, with distinction, from George Mason University School of Law.

John Holdren, Senior Vice President, Curriculum

Mr. Holdren serves as Senior Vice President of Curriculum of *k*12. From 1991 to 2000, Mr. Holdren served as Vice President and Director of Research and Publications at Core Knowledge Foundation. While at Core Knowledge Foundation, Mr. Holdren oversaw the development of the Core Knowledge Sequence: Content Guidelines for Grades K-8 and co-edited the Core Knowledge Series resource books. Mr. Holdren also has taught literature and writing at the University of Virginia and Harvard University. Mr. Holdren holds a B.A. from The Johns Hopkins University and an M.A. from the University of Virginia.

19.2. Appendix B: Knowledge Learning Corporation: Management's Discussion & Analysis of Financial Condition and Results of Operations for the Fiscal Years Ended December 31, 2005, 2004 and 2003

The
Shimon Post
Presidential Press Bulletin

25 August, 2011

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Article 1.

Scientific American

Is Muammar Qadhafi Clinically Psychotic?

John Matson

August 23, 2011 -- OUT OF TOUCH: The bizarre statements Col. Muammar Qadhafi has made in the past several months may result from a self-imposed insulation from reality, rather than a delusional detachment from it. Six months after a civil uprising began in Libya, Col. Muammar Qadhafi, the nation's longtime leader, finally seems to have lost his grip on the country he ruled for more than 40 years. Did he also, at some point, lose his grip on reality? As the conflict spread across Libya, Qadhafi made a number of bizarre statements to members of the media, denying that demonstrators were angry with the government and even claiming that any conflict that might be unfolding was the result of drinks spiked with hallucinogenic drugs. More recently he has pledged to defend the capital, Tripoli, even as rebel forces swept through the city with surprising swiftness. Was Qadhafi deluded about the state of his nation or was he simply unwilling to accept that his time had come? To get some insight on the Libyan leader and other out-of-touch dictators, we spoke to Jerrold Post, a professor of psychiatry, political psychology and international affairs, and director of the Political Psychology Program at George Washington University. Post is a CIA veteran who has written psychological profiles of a number of world leaders.

What is it about leaders like Qadhafi that makes them unable to see or accept their own impending downfall?

Leaders like this? I'm not sure there are other leaders like Qadhafi. In terms of many of the autocratic dictators who went down with bewildering speed in the Arab Spring, one of the reasons the public dismay—what then becomes revolutionary fervor—is so startling is they are really protected by this circle around them from understanding how their popularity is ebbing. They can have a very unrealistic understanding and believe, as Qadhafi stated again and again, "My people, they all love me." I found this language of his quite remarkable. And with Qadhafi as an exaggerated example, this is true of any of the other leaders, too—namely, they believe they have widespread support. If there are public demonstrations against them, that must reflect outside agitators. This was true with [ousted Egyptian president Hosni] Mubarak as well. He spoke of outside conspiracies. But it is particularly true of Qadhafi. There is an interesting kind of almost syllogism for him: "My people all love me, and therefore if there is anyone protesting against me, they are not really my people, and that must be a consequence of outside provocation." And one of the points that he made early on was that this was crazed youth who were on hallucinogens with which their Nescafe had been laced, which I thought was rather creative, really.

I found Qadhafi's language in general very striking. And what is most interesting about it is it is entirely in the first person singular: "My people all love me. They will support me. My people, they love me." It was very "me" centered. A vivid contrast—and this will seem like a ludicrous comparison—was Churchill during World War II. Churchill always spoke in first person plural, and his way of strengthening the morale of his people was to talk about "us," "our trials and tribulations," to identify with the people. It was a remarkable case of charismatic leadership. Qadhafi, in contrast, speaks only about himself. He identifies himself as the creator of Libya, and one of his early quotes said, "I created Libya, and I can destroy it."

Are Qadhafi and other deposed leaders deluded in thinking all is well in their kingdom or their country?

Deluded isn't quite the word, because if you're surrounded by a group of sycophants who tell you what you want to hear, not what you need to hear, you can be in touch with reality by psychological tests but quite out of touch with reality politically. With Saddam Hussein, this was particularly true—where to provide criticism of him was either to lose your job or lose your life. Everyone was constantly praising him and his brilliance, and he was spared wise council.

In addition to these circles of sycophants, is narcissism a common trait among autocrats?

That is a wonderful question. I'm just putting the finishing touches on my capstone book, which will be called *Dreams of Glory: Narcissism and Politics*. I see narcissism as being a very powerful explanatory factor for many of these leaders, who display a number of traits of narcissism. One is they have a really exalted self-concept on the surface, and are very sensitive to slight or any information to the contrary. So they can get very angry if someone questions them. Secondly, when there is something that shatters that image—and this will be interesting to see what happens with Qadhafi—there can be what's called a narcissistic rage. So, for example, with Saddam Hussein as he was exiting Kuwait, lighting the oil wells on fire—that was probably an example of that. Their interpersonal relationships are very disturbed, and they surround themselves with people who make them feel good. So that it is really a great hazard to in any way criticize the leader. Qadhafi did a great deal to hollow out the institutions of government, and while he said that he couldn't give up his position because he had no position—which was literally true—he was appointed the eternal guide of the Libyan people, with no authority over them. But in fact, 20 percent of the people's committees had counterintelligence responsibilities for sniffing out people plotting against him, who were always dealt with very harshly. Even when people fled Libya he would track them down, and he even made an assassination attempt of a Libyan exile living in the United States early on.

In a profile that you wrote for *Foreign Policy* in March, you mention that Qadhafi has some hallmarks of a borderline personality. How does that manifest itself?

This will sound slightly sarcastic, but the borderline refers to individuals—it kind of comes from the borderline between neurosis and psychosis—who can often function perfectly rationally but may under certain stresses go below the border and have their perceptions distorted and their actions impaired. The two circumstances where Qadhafi seems to go below the border are A, when he's succeeding; and B, when he's failing. An example of when he's succeeding would be when he was marching toward Benghazi with very little resistance. He can really get almost high and feel invulnerable. When he promised he would search down his enemies from room to room, which partially contributed to the NATO reaction to him, that's an example of that kind of exaggerated belligerent high he can go on. On the other hand, when he is suffering, when he is under pressure, and particularly when he is not being seen as the powerful and exalted leader—and that's really the case to an extreme now—it hits another place in his psychology, and that's the kind of noble Arab warrior who will stand tall against superior force. There was an example in the 1970s when he had declared that Libyan sovereignty extended to 200 miles off its coast, when international waters start at 12 miles. He declared that anyone who crossed this "line of death" would be subject to attack. The U.S. was planning maneuvers in the Gulf of Sidra and went inside this 200-mile zone. Qadhafi sent out three sorties of jets against them, which were promptly shot down. But after, it was interesting. He said, "I want to thank the United States for making me a hero to the Third World." Standing tall against a superior adversary has great value in the Arab world.

In your view, is there anything that Qadhafi could have done to remain in power or is he just fundamentally out of touch with Libya today?

One should remember back to Saddam Hussein again, and how long it was before we finally found him. I believe that until the end he believed that he could get past this and would reach heroic stature for standing up against the enemy, and that his people would support him. A couple of questions get asked about leaders here. A, would he go off to a lush exile as, say, [former Haitian president] "Baby Doc" Duvalier did? Or B, would he commit suicide? I don't think either of those is in the cards for Qadhafi. In fact, he gave this defiant speech on August 21, which insisted that he was in Tripoli and wouldn't surrender: "We cannot go back until the last drop of our blood. I am here with you. Go on. Go forward." And in a brief television statement the same day, "Go out and take your weapons, all of you. There should be no fear." It's a rather different thing than Churchill, who was advised to move out of London and instead stayed there to absorb the Blitz along with the British people. He was sort of a role model for heroism and spoke—again in the first person plural—about, "We will stand tall, we will resist this tyranny." It was really remarkably inspiring. But with Qadhafi, again, it's always the "me," and that goes back to your narcissism. He has a very difficult time, as most narcissists do, empathizing with the pain and suffering of others. Everything is about him.

So how do you see this playing out for Libya?

Well, it's quite clear that the rebels are in control, but things will not really be fully clarified until Qadhafi is either killed, forced to surrender when there's no one left around him or goes down in a blaze of bullets. I gather there has been some talk about him going into exile in Tunisia. That's not totally out of the question, but if he does so, that's not with the idea of giving up so much as temporarily taking refuge there in order to continue on as the leader of Libya. So I think that there's every reason to believe that what we are seeing is the last act, but it could be prolonged until they actually succeed in capturing him. Of course part of what makes it so difficult for him to leave is the indictment by the International Criminal Court in the Hague. His son Saif al-Islam is also indicted for crimes against humanity. So there really is no way out for him. I think it's important to note that his most important audience is the mirror. And when he says these things he really does believe them. It's sounds crazy, but it's kind of like, "Mirror, mirror, on the wall, who's the most important Muslim Arab Third World leader of them all?" And the answer is, "You, Muammar." He is really going have a very difficult time seeing people celebrating his going down, in terms of trying to sustain that heroic inner image.

Article 2.

The Financial Times

Why Libya sceptics were proved badly wrong

Anne-Marie Slaughter

August 24, 2011 -- Let us do a thought experiment. Imagine the UN did not vote to authorise the use of force in Libya in March. Nato did nothing; Colonel Muammer Gaddafi over-ran Benghazi; the US stood by; the Libyan opposition was reduced to sporadic uprisings, quickly crushed. The regimes in Yemen and Syria took note, and put down their own uprisings with greater vigour. The west let brutality and oppression triumph again in the Middle East.

This is the scenario many wise heads were effectively arguing for with their strong stands against intervention to stop Col Gaddafi. Over the months those analysts have reminded us of their views, calling Libya a quagmire. This week one of the leading proponents of that position, my friend and colleague Richard Haass, shifted gears – but only to remind us just how hard the road ahead in Libya is likely to be. I do not know anyone, regardless of the side they took in the initial debate, who thinks this task will be easy; indeed, the battle against Col Gaddafi is not yet won. But not so fast. Before we focus on what must happen next, let us pause for a minute and reflect on that initial debate and the lessons to be learnt.

The first is that, against the sceptics, it clearly can be in the US and the west's strategic interest to help social revolutions fighting for the values we espouse and proclaim. The strategic interest in helping the Libyan opposition came from supporting democracy and human rights, but also being seen to live up to those values by the 60 per cent majority of Middle Eastern populations who are under 30 and increasingly determined to hold their governments to account. This value-based argument was inextricable from the interest-based argument. So enough with the accusations of bleeding heart liberals seeking to intervene for strictly moral reasons.

We also now know how different intervention looks when we help forces who want to be helped. East Timor, Bosnia-Herzegovina, Kosovo, Libya – all cases where force evened out odds between a brutal government and a widespread and legitimate social or national movement. It is difficult to know when a state has failed in its responsibility to protect its people, particularly when secession is involved. This is why international authorisation is both required and difficult to obtain. But the contrast with Iraq and Afghanistan, where external invasion saw the US often labelled as an enemy, is enormous.

Another clear lesson: the depiction of America as "leading from behind" makes no sense. In a multi-power world with problems that are too great for any state to take on alone, effective leadership must come from the centre. Central players mobilise others and create the conditions and coalitions for action – just as President Barack Obama described America's role in this conflict. In truth, US diplomacy has been adroit in enabling action from other powers in the region, and then knowing when to step out of the way.

That said, we must not focus just on states, because Libya also shows that social forces are increasingly powerful drivers of foreign policy. Those forces have now pushed both the west and Arab governments into taking a much harder line than simply geostrategic logic would dictate against Bashar al-Assad's brutality in Syria, and even (albeit timidly) against torture and killings by the Bahraini government. Social movements are also beginning to reshape politics in Israel and India.

Looking forward, it is really not up to the west, much less the US, to plan Libya’s transition. It is a relief to see so many articles and statements reflecting lessons learnt from Iraq. But the Libyans are far ahead of where the US was when the initial fighting ended in Iraq. The National Transitional Council has a draft constitutional charter that is impressive in scope, aspirations and detail – including 37 articles on rights, freedoms and governance arrangements.

The sceptics’ response to all this, of course, is that it is too early to tell. In a year, or a decade, Libya could disintegrate into tribal conflict or Islamist insurgency, or split apart or lurch from one strongman to another. But the question for those who opposed the intervention is whether any of those things is worse than Col Gaddafi staying on by increasingly brutal means for many more years. Instability and worse would follow when he died, even had he orchestrated a transition.

The sceptics must now admit that the real choice in Libya was between temporary stability and the illusion of control, or fluidity and the ability to influence events driven by much larger forces. Welcome to the tough choices of foreign policy in the 21st century. Libya proves the west can make those choices wisely after all.

The writer is a former director of policy planning for the US state department

Article 3.

Foreign Policy

Sinai’s Bedouin run amok in post-Mubarak Egypt

Mohamed Fadel Fahmy

AUGUST 24, 2011 -- The landscape of Egypt's lawless North Sinai governorate is punctuated by the bullet-riddled, torched police station of Sheikh Zuweid, a densely populated town roughly nine miles from the Gaza border. It is just one of the security buildings that has fallen victim to the long-running clashes between the military and the Bedouin tribes of the region, clashes that have only escalated since Egypt's revolution. Hosni Mubarak's regime branded the Bedouin, a largely nomadic and clan-based people, as outlaws who threatened Egyptian sovereignty. As his rule collapsed in February, and afterward, the Bedouins sought retribution against the security services that long oppressed them, attempting to carve out a degree of autonomy in the region. The unrest has turned into an economic headache for Egypt's new military rulers: The pipeline that supplies 40 percent of Israel's natural gas has been bombed five times since the revolution, halting the country's natural gas exports. But more importantly, Sinai has become a breeding ground for Islamist extremism and violence that -- barring a dramatic improvement in relations between the Bedouins and the central government in Cairo -- threatens Egypt and the region at large. Sinai's lawlessness recently sparked an international incident: On Aug. 18, gunmen carried out a string of attacks in southern Israel that left eight Israelis dead. The Israeli government, which claimed that the attackers were militants from the Gaza Strip who had crossed into Israel through the porous Sinai border, retaliated by launching attacks in both Gaza and Egypt.

That same night, five Egyptian soldiers were killed and several injured during an attack on the Egyptian side of the border. Lt. Col. Amr Imam, a media spokesman for the Egyptian military, said that the officers were killed by an Israeli Apache helicopter that fired two rockets. "It may have been a mistake," he said. Also on Aug. 18, a man wearing an explosives belt blew himself up at an Egyptian checkpoint 11 miles from the Sinai town of Taba, killing an officer and injuring two others. "The body of the dead officer and the unidentified head of the bomber were brought over to the hospital," said Abel Wahab, a doctor in the emergency department of the hospital in el-Arish, North Sinai's capital. The Israeli operation outraged the Egyptian public and prompted thousands to protest outside the Israeli Embassy in Cairo. Amid rumors that Egypt might recall its ambassador from Tel Aviv, the Egyptian government also brushed off a rare Israeli statement of regret as "not in keeping with the magnitude of the incident and the state of Egyptian anger."

In Sinai, that anger is more palpable -- but it's more often directed at the Egyptian state. Ibrahim al-Menaei, a leader of the Swarkeh tribe, considered the most powerful tribe in the north, told me that Mubarak's formally dissolved state security apparatus was to blame for the lack of law and order in the region. He accused the security forces of framing his people for crimes that they did not commit and labeling them as drug and weapons dealers. "I will not let a single police officer into this region until they give in to our demands," Menaei explained as he sat in the sanctuary of his safe house a few kilometers south of the Israeli border, surrounded by his five sons and armed disciples. He called on the new Egyptian government to repeal laws that prevent the Bedouins from owning land, abolish all absentia sentences against Bedouins that were issued during Mubarak's rule, and prosecute police officers responsible for killing Bedouins. There are in fact two Sinais: the impoverished north and the more-developed south, home of beach resorts catering to international tourists. The security vacuum may have turned Sinai into a regional hot spot, but it is also an economic boon to Bedouin leaders, who have thrived off what is literally an underground economy. Menaei said that he spent $100,000 to construct a subterranean tunnel large enough to smuggle cars into nearby Gaza. "As many as 200 cars a week were smuggled through," he said. "Hamas gets $1,000 per car as tax," he explained. "The buyer pays me the car's price and rent money for using the tunnel -- $5,000 for a car and around $8,000 for a truck." Such a lucrative source of revenue requires significant weaponry to protect it. "This is our operation room," Menaei boasted, showing off two 14.5 mm anti-aircraft machine guns stored in the corner of the room, covered with bedsheets. The smugglers showed me one of their blockade-busting tunnels positioned to relieve the Gazans' suffering from the Israeli blockade and sanctions. It was equipped with ventilation and lighting systems, as well as network boosters meant to amplify the mobile-phone signal. Its entrance was well hidden between man-made huts and fences located amid an olive tree field in the desert. "I get $50 for every Palestinian I smuggle into Sinai," Menaei said, explaining that Hamas supervises the smuggling operation from the Gaza side of the border. Standing nearby, one of his sons demonstrated how the smugglers plunge safely into the tunnel using a rope tethered above ground. Salem Aenizan, a fugitive leader from the Tarabin tribe, insisted that the Bedouins' links to Gaza are based on financial interest rather than an ideological affinity with Hamas. He told me that the tunnels are used to smuggle food, cars, medicine, and construction materials -- but that the weapons trade ceased after Hamas's 2007 takeover of Gaza and that the smugglers refuse to transport suicide bombers or people intent on kidnapping tourists. But the Bedouins' entrepreneurial spirit has nevertheless led to some interesting opportunities. "We built the Gaza Zoo," Aenizan boasted. "I received $20,000 once for smuggling a tiger. We had to drug it." For the Bedouins, the profits that they reap from smuggling are only compensation for generations of neglect and outright hostility from Egypt's central government. "Only 10 percent of my people benefit from the tourism industry," Aenizan said. "The rest is pocketed by Egyptian tycoons." It is not unusual for Bedouins to refer to non-Bedouins as "Egyptians" -- a sign of their detachment from Egyptian society. Running water is still scarce in many areas of Sinai, another sign of the government's negligence. Although most Bedouins hold Egyptian citizenship, they are not allowed into the high ranks of the military, according to Aenizan and Menaei.

Aenizan, who is wanted on an 80-year sentence for allegedly smuggling goods, described how interactions with the corrupt judicial system often sour Bedouins on the state. "They jailed our women to force us to turn ourselves in," he said, attempting to justify his contempt toward the government. "I didn't even enter a court or have a lawyer. They ask you to be an informer. If you refuse, they frame you." The Bedouins' long-simmering frustration with the Egyptian state boiled over during the mass protests that led to Mubarak's fall from power. Three police officers were kidnapped by armed men in el-Arish during the height of the revolution, and their whereabouts still remain unknown. Tourists fled the city as lawlessness grew more pronounced. But while Sinai's disorder has mainly been exploited by people looking to make a quick buck, a disturbing ideological element has also tried to fill the political space. On July 29, during a protest calling for an Islamic state after Friday prayers in el-Arish, close to 100 armed militants mounted on motorcycles and pickup trucks stormed through the city waving black flags, terrorizing residents, and attacking the police station. Gun battles with security forces lasted for hours, leaving seven people dead, including two police officers and a 13-year-old boy caught in the crossfire, according to Gen. Saleh el-Masry, head of North Sinai security. Masry said that the attackers belonged to the radical Islamist group Takfir wal-Hijra, as well as Palestinian factions that snuck through the tunnels. "The Takfiris" -- extremist militants with a dogmatic, exclusionary ideology -- "have become more active during the revolution," he said, claiming that Egyptian security forces had arrested 12 of the assailants in the el-Arish attack, including three Palestinians. The spike in violence has been fueled by outlaws who escaped Egypt's prisons during the anarchy that accompanied Mubarak's fall. Deputy Interior Minister Gen. Ahmed Gamal El Din told me in an interview that 23,000 criminals escaped from Egypt's prisons during the revolution and that only 7,300 had been rearrested or turned themselves in as of May. The prison breaks also freed some men allegedly linked to al Qaeda, who appear to be attempting to establish a foothold in Sinai's ungoverned spaces. Maj. Yaser Atia of Egypt's General Security confirmed that Ramzi Mahmoud al-Mowafi, also known as "the chemist" for his expertise in preparing explosives, escaped a Cairo prison on Jan. 30. The fugitive's prison files presented to me indicate that the 59-year-old Egyptian had fled to Afghanistan and joined al Qaeda. Upon his return to Egypt he was given a life sentence by a military tribunal, though more details on the charges against him remain unclear. Egyptian intelligence sources told me that Mowafi is currently in Sinai, though they played down the threat he posed. And then there is the matter of the fliers. On July 29, the residents of el-Arish found a flier labeled "A statement from al Qaeda in the Sinai Peninsula" distributed throughout their neighborhoods. It describes Islam as the only true religion and criticizes the Camp David agreement that led to the Israeli-Egyptian peace treaty. Gen. Abdel-Wahab Mabrouk, the governor of North

Sinai, said that the fliers had been distributed outside mosques after Friday prayers by men who covered their faces with scarves. Several days later, another purported al Qaeda flier appeared around el-Arish -- this time announcing that the organization was planning to attack police stations on Aug. 12. For the Egyptian security services, that was one provocation too far. On that day, stunned residents of el-Arish woke to find thousands of troops from the Egyptian 2nd Army, accompanied by police officers and border guards, deployed in an "anti-terror" crackdown in Sinai. The operation's first phase entailed securing government buildings, police stations, and the el-Arish prison. The offensive started on Aug. 15, as one Egyptian militant was killed and 12 were arrested, according Hazem al-Maadawi, a police officer involved in the operation. State news agency EgyNews said authorities are targeting 15 more people who participated in attacks at the el-Arish police station, including members of the al Qaeda-affiliated Palestinian group Jaish al-Islam. These extremist rumblings have frayed nerves in the Israeli government, which had already been skeptical of the Egyptian revolution. Israeli Prime Minister Benjamin Netanyahu told a Knesset committee on May. 30, "Global terrorist organizations are meddling [in Sinai] and their presence is increasing because of the connection between Sinai and Gaza." If there is any hope of restoring order to Sinai, it lies in a historic rapprochement between the Bedouins and the Egyptian security forces to drive out these unwanted interlopers. Bedouins have signaled their willingness to help restore security, but are also calling on the Egyptian government to do its part by finally integrating them into Egypt's social fabric. "We will not let a single Palestinian suspected of ill intentions into Sinai after the attacks," said Muhammed al-Ahmar, a Bedouin and human rights activist. "But, we are fed up with empty promises, and if the police mentality does not change, then nothing will work. It's time for Sinai to flourish and regain its full rights." Egypt's new government has made tentative steps in that direction: Members of the Supreme Council of the Armed Forces, accompanied by the deputy interior minister and members of the military intelligence, held a meeting on Aug. 20 in the el-Arish military club, in a conference hall with Bedouin sheikhs representing each tribe in Sinai. At the meeting speakers from both sides expressed their willingness to cooperate in bringing the security situation back to normal and to bury the hatchet "for love of Sinai." The government officials announced their concessions, including promises to soon issue a new law regarding land ownership in the region and to revisit the files of those Bedouins sentenced in absentia; the Bedouins dutifully clapped at the news. Several Bedouin sheikhs subsequently took to the podium and announced their intentions to assist in securing the region.

The government's planned reforms are a good start, but after years of neglect, it's going to take more than promises to win over the Bedouins. If Egypt is truly concerned about securing Sinai, it must quickly turn its words into actions.

Mohamed Fadel Fahmy is the author of Baghdad Bound and works as a freelance news producer/journalist for CNN in Cairo.

Article 4.

The National Interest

Foreign-Policy Failure

Dimitri K. Simes

August 24, 2011 -- PRESIDENT BARACK Obama is in many respects the opposite of Richard Nixon and George H. W. Bush, both foreign-policy presidents who subordinated their domestic ambitions to America's national-security requirements. Moreover, where Obama has succeeded internationally, his successes have been largely tactical rather than strategic, reflecting the fact that he is fundamentally a domestic leader with a European-style socialist agenda but little or no foreign-policy vision. This lack of an international agenda is why the president may be called a pragmatist, but not a realist.

One result of all this is that his administration's foreign-policy choices often appear substantially driven by political expediency—and particularly a desire to avoid domestic criticism, something apparent in both the president's surge in Afghanistan and his later plan for withdrawal. Another is that, lacking a vision, the administration rarely appears to engage in long-term thinking about the international environment, historical processes or the potential unintended consequences of its choices. In fact, its sense of history seems highly politicized and simplistic.

Short-term political thinking about foreign policy cannot sustain America's international leadership, which requires clear distinctions between immediate tactical problems and longer-term strategic threats. Today, most analysts agree that the greatest danger to the United States is not from Iran, which does not yet have nuclear weapons, or even al-Qaeda, which has been seriously damaged, but rather from Pakistan's nuclear arsenal. Maintaining the Pakistani government's ability to control its roughly one hundred nuclear weapons is a vital American national interest; the loss of a single warhead to extremists, whether through a government collapse or through a disaffected anti-American faction in Pakistan's military or intelligence services, could be devastating.

Strikingly, U.S. policy has given relatively little weight to this concern: the Bush administration subordinated a coherent U.S. strategy in the region to the optional invasion of Iraq; both the Bush and particularly the Obama administrations have emphasized the war against al-Qaeda to such an extent that the U.S.-Pakistan alliance is in tatters. Now Islamabad's very stability has come into question.

It is good to hear from Secretary of Defense Leon Panetta and other senior officials that al-Qaeda and the Taliban have suffered major setbacks. It was even better to hear that U.S. troops had finally killed Osama bin Laden. Nevertheless, these triumphs have come at demonstrable cost. There was perhaps no reliable way to kill bin Laden without grievously offending Pakistan's government and people, though a senior administration official has admitted that the United States "underestimated the humiliation factor" of the raid. Still, American officials could have structured U.S.-Pakistan relations in a way that would have made this necessary infringement on Pakistan's sovereignty the exception rather than the rule in Washington's approach to its admittedly frustrating and unreliable ally. Instead, the administration expanded drone attacks on less-than-essential targets (the average frequency of drone strikes under President Obama is one every four days, compared to one every forty days during the Bush administration); harshly criticized Pakistan's government and military before the Abbottabad operation; embarrassed both by killing bin Laden inside the country; and then followed the action with further public criticism and cuts in assistance to the Pakistani military.

Can the United States afford to push Pakistan over the edge? If not, we must find a way to balance our clear interest in defeating al-Qaeda and the Taliban against Pakistan's continued stability—including our relationship with Pakistan's government, military and citizens. Dennis Blair, forced to resign last year as director of national intelligence, has suggested coordinating drone strikes much more closely with Islamabad.

In the longer run, China's rise will clearly be a historic challenge to the United States. Yet, while administration officials talk frequently about China in domestic contexts, the president's policy toward Beijing is fundamentally incoherent.

Two recent books, Henry Kissinger's On China and Aaron Friedberg's A Contest for Supremacy: China, America, and the Struggle for Mastery in Asia, suggest two very different interpretations of Chinese conduct and propose alternative American responses. Kissinger views China as a rising but thus far moderate power and warns against creating a self-fulfilling prophecy that could lead to zero-sum competition between Beijing and Washington. He argues that such rivalry could lead to a pre–World War I situation with potentially devastating consequences for both nations and for the rest of the world. Friedberg ridicules this approach, arguing that the United States should seek to democratize China and, if this does not succeed, should practice assertive containment. In his view, if the World War I analogy has any value, it is in demonstrating that the British were too timid in responding to Germany's rise.

Kissinger and Friedberg offer coherent proposals that are mutually exclusive. Kissinger's is much more persuasive to me, but there is a choice—and America must make a decision. Accordingly, it is quite troubling to see the Obama administration trying to have it both ways: building a cooperative relationship with Beijing while visibly siding with China's neighbors in every dispute. At the same time, after initially downplaying democracy promotion, the administration seems to have begun to pursue it with new energy, partly under the influence of Chinese dissidents and partly, insiders say, because officials are reluctant to be portrayed as China apologists. Whatever the motivation, Beijing is likely to view this combination of external and internal pressure as a serious threat.

Meanwhile, if the White House is seriously seeking to contain China or, alternatively, to shape a global environment that would make containment unnecessary, it is hard to imagine how this could be done without precluding any rapprochement between Moscow and Beijing. The administration claims the reset with Russia is one of its most significant foreign-policy successes. But there is less here than meets the eye—on both sides. Russian concessions so far have been halfhearted and Russian policies, whether on Iran or Libya, do not coincide with those of America. For its part, the United States appears unprepared to address Moscow's greatest concerns: integration into Europe's security architecture and reliable assurances on missile defense.

More narrowly—but no less problematic for U.S. efforts to have better relations with Russia than Russia has with China—Obama's team is risking alienating a large portion of the Russian elite in its response to corruption and human-rights violations. While the State Department has made clear its opposition to legislation punishing Russian officials allegedly linked to the death of lawyer Sergei Magnitsky while in police custody, the administration has decided preemptively to deny visas to those it considers implicated in the case. Moscow has stated clearly that this could derail cooperation across the board, including on sanctions against Iran and transit to Afghanistan (a deal that becomes even more important as U.S. ties to Pakistan deteriorate).

Corruption in Russia is pervasive and is an obstacle to foreign investment and ultimately to any political or economic progress in the country. But with American blood and treasure safeguarding some of the most corrupt governments in the world in Afghanistan and Iraq, focusing on Russia's real and serious corruption in a way that could endanger America's relationship with this important power is hard to justify.

Notwithstanding predictions of America's decline, the United States is still the world's greatest power and can remain so for quite some time. However, as other powers rise, and as America becomes increasingly preoccupied with its economic future, the margin for error is shrinking. The United States faces critical choices—and it needs leaders able to make them.

Dimitri K. Simes is the president of The Nixon Center.

Article 5.

NYT

Cheney Says He Urged Bush to Bomb Syria in ’07

Charlie Savage

August 24, 2011 — Former Vice President Dick Cheney says in a new memoir that he urged President George W. Bush to bomb a suspected Syrian nuclear reactor site in June 2007. But, he wrote, Mr. Bush opted for a diplomatic approach after other advisers — still stinging over “the bad intelligence we had received about Iraq’s stockpiles of weapons of mass destruction” — expressed misgivings. “I again made the case for U.S. military action against the reactor,” Mr. Cheney wrote about a meeting on the issue. “But I was a lone voice. After I finished, the president asked, ‘Does anyone here agree with the vice president?’ Not a single hand went up around the room.”

Mr. Bush chose to try diplomatic pressure to force the Syrians to abandon the secret program, but the Israelis bombed the site in September 2007. Mr. Cheney’s account of the discussion appears in his autobiography, “In My Time: A Personal and Political Memoir,” which is to be published by Simon & Schuster next week. A copy was obtained by The New York Times.

Mr. Cheney’s book — which is often pugnacious in tone and in which he expresses little regret about many of the most controversial decisions of the Bush administration — casts him as something of an outlier among top advisers who increasingly took what he saw as a misguided course on national security issues. While he praises Mr. Bush as “an outstanding leader,” Mr. Cheney, who made guarding the secrecy of internal deliberations a hallmark of his time in office, divulges a number of conflicts with others in the inner circle.

He wrote that George J. Tenet, the director of the Central Intelligence Agency, resigned in 2004 just “when the going got tough,” a decision he calls “unfair to the president.” He wrote that he believes that Secretary of State Colin L. Powell tried to undermine President Bush by privately expressing doubts about the Iraq war, and he confirms that he pushed to have Mr. Powell removed from the cabinet after the 2004 election. “It was as though he thought the proper way to express his views was by criticizing administration policy to people outside the government,” Mr. Cheney writes. His resignation “was for the best.”

He faults former Secretary of State Condoleezza Rice for naïveté in the efforts to forge anuclear weapons agreement with North Korea, and Mr. Cheney reports that he fought with White House advisers over softening the president’s speeches on Iraq.

Mr. Cheney acknowledged that the administration underestimated the challenges in Iraq, but he said the real blame for the violence was with the terrorists.

He also defends the Bush administration’s decision to inflict what he called “toughinterrogations” — like the suffocation technique known as waterboarding — on captured terrorism suspects, saying it extracted information that saved lives. He rejects portrayals of such techniques as “torture.”

In discussing the much-disputed “16 words” about Iraq’s supposed hunt for uranium in Niger that were included in President Bush’s 2003 State of the Union address to help justify the eventual invasion, Mr. Cheney said that unlike other aides, he saw no need to apologize for making that claim. He writes that Ms. Rice eventually came around to his view.

"She came into my office, sat down in the chair next to my desk and tearfully admitted I had been right," he wrote.

The book opens with an account of Mr. Cheney's experiences during the terrorist attacks of Sept. 11, 2001, when he essentially commanded the government's response from a bunker beneath the White House while Mr. Bush — who was away from Washington and hampered by communications breakdowns — played a peripheral role. But Mr. Cheney wrote that he did not want to make any formal statement to the nation that day.

"My past government experience," he wrote, "had prepared me to manage the crisis during those first few hours on 9/11, but I knew that if I went out and spoke to the press, it would undermine the president, and that would be bad for him and for the country.

"We were at war. Our commander in chief needed to be seen as in charge, strong, and resolute — as George W. Bush was."

Mr. Cheney appears to relish much of the criticism heaped on him by liberals, but reveals that he had offered to resign several times as President Bush prepared for his re-election in 2004 because he was afraid of becoming a burden on the Republican ticket. After a few days, however, Mr. Cheney said that Mr. Bush said he wanted him to stay.

But in the Bush administration's second term, Mr. Cheney's influence waned. When Mr. Bush decided to replace Donald H. Rumsfeld as secretary of defense after the 2006 midterm elections, Mr. Cheney said he was not given a chance to object.

Mr. Cheney praised Barack Obama's support, as a senator from Illinois, for passing a bank bailout bill at the height of the financial crisis, shortly before the 2008 election. But he criticizes Mr. Obama's decision to withdraw the 33,000 additional troops he sent to Afghanistan in 2009 by September 2012, and writes that he has been “happy to note” that Mr. Obama has failed to close the prison in Guantánamo Bay, Cuba, as he had pledged.

Mr. Cheney’s long struggle with heart disease is a recurring theme in the book. He discloses that he wrote a letter of resignation, dated March 28, 2001, and told an aide to give it to Mr. Bush if he ever had a heart attack or stroke that left him incapacitated.

And in the epilogue, Mr. Cheney writes that after undergoing heart surgery in 2010, he was unconscious for weeks. During that period, he wrote, he had a prolonged, vivid dream that he was living in an Italian villa, pacing the stone paths to get coffee and newspapers.

Article 6.

Ma'an News Agency

Palestine and Statehood: An historical overview

Abdullah Abueid

24/08/2011 -- Until 1923, Palestine was part of the Ottoman Empire. In December 1917, British troops entered Jerusalem and ended 400 years of Ottoman rule. In 1922, the League of Nations issued the Mandate of Palestine which authorized the United Kingdom to become the Mandatory Power in Palestine.

The Mandate Document, however, included several paradoxical stipulations contrary to the Mandate System as set forth in Article 22 of the League's Charter.

Major stipulations

The Mandate Document included several paragraphs, which were considered by many historians and international lawyers as flagrant breaches of the word and spirit of the Mandate system. The system was intended to protect the territories occupied by the British and French from the axis enemy (Germany, the Austro-Hungarian Empire and the Ottoman Empire), and to develop these territories to independence and freedom for their populations.

The MD, contrary to that system, stipulated that the UK must develop the territory of Palestine in cooperation with the Jewish Agency in order to achieve a national home for the Jewish people, ignoring the real interests of the vast majority of Palestinian Arabs or Palestine.

In 1922 Palestine was still considered as a part of the sovereignty of the Ottoman Empire, which became Turkey after that date. It wasn't until Turkey signed the Lausanne Treaty in 1932 that Turkey relinquished her claim to sovereignty on Palestine. Thus, the MD was in clear breach of the rules of international law.

The Legal Status of Palestine

The UK's rule over Palestine contained flaws and several breaches. The Mandatory Power (UK) was considered, by many international lawyers, as a colonial power, which should have supervised the Mandate Territory and developed it as an honest trustee, which it failed to do.

In regards to sovereignty over Palestine during the years of the Mandate, many international experts consider that sovereignty was inherent to the people of that territory and was temporarily in the hands of the League of Nations. Palestine was considered as an embryo of a state.

It had its constitutions in 1922, its nationality law in 1925 and several other laws and by-laws covering almost all aspects of life and social and economic activities.

The Mandatory Power exerted all its efforts to help the Zionist Organizations, represented by the Jewish Agency, the Jewish Keren Ha' Kayemet, the Jewish Keren Ha'yesud and the Zionist Haganah [the armed organization of the Jewish agency], to bring an influx of Jewish immigrants into the Mandated Territory, to develop their own independent economy, arms and to construct armed settlements, in all Palestine.

All of this was claimed to be in conformity with the MD of Palestine, which was the legal fig-leaf in concealing the real goals of both the imperial power and Zionist Organizations.

During the whole of British rule, Palestinians revolted and demonstrated, but the British forces dealt with these revolutionary acts in utmost cruelty, putting them down and killing thousands of Palestinian Arabs and deporting or imprisoning tens of thousands.

In 1947, the UK government, unable to control the strong Zionist terrorist organizations, decided to refer the whole issue to the United

Nations General Assembly which issued in November 26, 1947 a resolution dividing Palestine into two states: A Jewish state consisting of 54 percent of the territory of Palestine, an Arab state consisting of 44 percent of that territory, and the Jerusalem Area, as a Corpus Separatum, consisting of 2 percent of Palestine.

Furthermore, the Resolution decided to have an Economic Union between the two states and stipulated that the Jerusalem Area, which included Bethlehem, should be a separate area under the control of the UN.

The Zionist leadership pretended to accept the resolution, relying on the fact that it would be refused by the reactionary Arab leadership.

After the UN Resolution, clashes broke out among the two communities. The armed Zionist organizations, well prepared and organized, as well as heavily armed, defeated the poorly armed Palestinians and the weak unorganized Arab armies.

They occupied and annexed 70 percent of Jerusalem and 50 percent of the territory allocated to the Arab State, and on May 15, 1948, declared the State of Israel on 78 percent of historical Palestine territory, leaving the Palestinians without a state and in limbo.

All these events happened in collusion among the colonial British government, the Jewish Agency and some Arab regimes, ruled and/or controlled by the British.

Aftermath of the 1948 War

As mentioned above, there was an enlarged Jewish state [Israel], but the remaining territories of Palestine were either annexed to Jordan [The West Bank], or put under Egyptian rule [The Gaza Strip].

So, the Palestinian people, who constituted 67 percent of the population of Palestine in 1947 and owned 93 percent of its land, were betrayed and left in a state of destitution.

Sixty-two percent of them were driven out of their home under gunpoint and in several massacres committed by armed Zionist organizations.

At present, there are 10.5 million Palestinians, including around 5 millions refugees, scattered in several Middle Eastern countries and other Diaspora states.

As for Palestinian Statehood: The UN General Assembly by great majority has recognized the right of the Palestinian people to self determination and statehood in more than 40 resolutions.

Most famous of these resolutions were the two issued in October, 1974: 3236 and 3237. The latter recognized the PLO as the legitimate representative of the Palestinian people and stipulated that it would be granted the status of Observer in all UN organs and affiliated organizations and its sponsored conferences.

In December 15, 1988, a month after the declaration of the State of Palestine by the PLO conference in Algiers, the UN General Assembly decided in its resolution of December 15, 1988 to recognize the PLO declaration of the State of Palestine and to substitute the use of PLO for the name of Palestine in all its organs and conferences.

UN membership

After the Oslo accords in 1993 and the failure of peace negotiations which lasted for 18 years, the PLO intends to bring to the UN General Assembly once again, through the UN Resolution number 377 of 1950, the issue of recognition of the State of Palestine on the basis of the June, 1967 borders.

Such resolutions, if issued by the UN General Assembly, could have some legal, political and media ramifications, but, nevertheless, it will not have any practical impact on the Israeli Government and some of its allies.

The State of Palestine will still lack a major element of a sovereign state: That is the "effective control" over territory and population. This can only be achieved when the Israeli occupation is compelled to withdraw from Palestine. This fact may push many members of the International Community to support Palestine to end the occupation. However, there will be a slim chance for the admission of the state of Palestine into the United Nations if the US, or any other permanent members of the UN Security Council uses the Veto in this regards. In this situation, the General Assembly cannot vote for the Admission of Palestine, as the International court of Justice ruled in its Advisory Opinion of March 3, 1950, in its interpretation of the provisions of Article 4 of the UN Charter.

The best procedure to be conducted in this regard is one of the following:

a) To apply to the General Assembly of the UN asking them to denounce the continuing Israeli occupation and to declare the strict and unchangeable will of members of the United Nations to end the occupation of all Palestinian lands occupied in 1967 and their confirmation of the right of the Palestinian People to self-determination and statehood in a "full fledged independent state on all occupied Palestinian Territories occupied in 1967, including East Jerusalem" living in peace side by side with Israel.

b) To ask the UN General Assembly to demand from the ICJ an Advisory Opinion on the right of the Palestinian people to self-determination and statehood on the occupied territories.

A resolution of the UN General Assembly, if taken by great majority of more than 75 percent of the members and an Advisory Opinion from the ICJ could have a great impact on most states and members of the international community. They would also carry an important moral pressure on both states and international civil society.

The Palestinians, Arab States, Arab public opinion and civil society and other friends and supporters of the Palestinian people, should play a very active role in organizing and administrating all possible measures to properly invest and harness the said Resolution and/or

Advisory Opinion.

One can give an example of the fruits of such good investment by referring to what the prominent Israeli leading newspaper Ha'aretz wrote in June 2011.

It referred to what several Israeli jurists and international law experts were aware of: "Palestine adhering to the Rome Statute of 1998 (the ICC Statute), thus becoming a member of the ICC capable of invoking its jurisdiction in cases of Israel committing war-crimes of other similar crimes".

Such membership is possible if many states and/or members of the ICC Statute are finally convinced that Palestine is a state which is worth becoming a member of the said convention. In this regard, it must be highlighted that the ICC Statute does not provide for states to become members of the ICC but that they should be members of the UNO. It only demands in all its Articles that Member States should be "States".

If support for Palestine is very high, it constitutes great pressure on several states and may be a turning point in their attitude towards Palestinian Statehood.

Abdullah Abu Eid is a professor of international law and human rights at Birzeit University

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From: J [jeevacation@gmail.com]
Sent: 5/15/2019 10:21:20 AM
To: paul krassner [[redacted]
Subject: Re: rather long and a few typos

On September 14, 1964, Dean Katherine Towle announced that existing University regulations prohibiting advocacy of political causes or candidates, outside political speakers, recruitment of members, and fundraising by student organizations at the intersection of Bancroft and Telegraph Avenues would be "strictly enforced."

shouldnt you write an artile 55 years later. on campus speech today. .

On Tue, May 14, 2019 at 8:17 PM paul krassner <[redacted]> wrote:

> # REMEMBERING CAVALIER MAGAZINE
>
> ## LAUNCHING A MAGAZINE
>
> My friend Michael Simmons, who has been the editor of *National Lampoon* and *High Times,* observes that *Cavalier* hired fine scribes. A few examples: Thomas Pynchon, Philip Roth, William Saroyman, Isaac Asimov, Theodore Sturgeon. *Cavalier* was launched by Fawcett Publications in 1952.
>
> Men's magazine *Cavalier* (motto: "For the American Male") was published the year before *Playboy* to whom it has often been compared, and back in the day tried to be seen as slightly hipper, more youthful and considered a bit more clever than its big name rival. Almost an anti-establishment *Playboy.* A slogan stated: "Your dad bought *Playboy*, you bought *Cavalier*."
>
> ## I BECAME A COLUMNIST
>
> I was invited to write a column, named "The Naked Emperor," for *Cavalier*, that was beginning to publish underground writers and artists. They paid me $1,000 a month. My first column was a report on an auction of two-inch squares from the hotel bedsheets slept on by the Beatles during their first trip to America.
>
> There were 300 screaming young girls, off on a fetishist's holiday. Obviously, there wouldn't be enough items to go around, but it was announced that the Beatles' unwashed towels and bed

linens were to be cut into two-inch squares and sold for $1 each. The price included a notarized statement of authenticity.

My second column was about Lenny Bruce—titled "Lenny the Lawyer," since he defended himself in trials He was arrested for obscene performances only because there were no blasphemy laws. I went to the bank and deposited my check, withdrawing half of it in cash, a $500 bill. Lenny was alone in his hotel room on Christmas Day when I presented it to him. And, with a large safety pin, Lenny attached the $500 bill to the outside breast pocket of his denim dungaree jacket.

AFTER JFK ASSASSINATION

In another column of mine, "Jack Ruby and His Dirty Little Secret," it began, "Lenny Bruce told me how all the night club comics used to Jack Ruby's "tattoo of a lady's *schmutzik* (translate: pussy) in his armpit." If it wasn't a fact, I was quite willing to settle for an apocryphal allusion which nevertheless crystallized the entire personality of that alleged murderer who wanted so very much to be liked.

I say *alleged* because upon Ruby's own death. Dallas District Attorney Henry Wade said he would dismiss the murder charge against him, a promise which has since been kept, although no such posthumous grace was ever officially bestowed on Lee Harvey Oswald. See, they grant you retroactive innocence only in the face of innumerable witnesses who were present at the actual event through the miracle of inadvertent televised coverage.

Now Jack Ruby's dirty little secret has been forever sealed away in his armpit by the hymen of history. Oh yeah, and at Lenny's funeral, that safety pin was still attached on his jacket.

JULES SIEGEL

Two years before Lenny's death, with his permission I published his obituary in my own magazine, *The Realist.* Before the issue went to press, he called his mother and a few others to let them know it would only be a hoax. The point was that he couldn't get work and his work was his life so he might as well be dead. And if people regretted that they hadn't helped him, well, now they could have a second chance because he was still alive. The obituary evoked inquiries from newspapers, wire services, foreign publications, radio and TV.

"What's the meaning of it?" one editor asked me. "There's a lot of excitement at the city desk."

"That *is* the meaning of it."

A few years later, without my permission, Jules Siegel, the editor of a short-lived magazine, *Cheetah*, published a fake obituary of me. I thought it was funny. An Associated Press reporter called, and I explained that it was a hoax.

"Are you sure?" he asked.

"Of course. I would tell you if I was dead."

Siegel started writing for *Cavalier*. His first assignment was a profile of Sterling Hayden, an actor best known in *Dr, Stranglove or How I Learned to Stop Worrying and Love the Bomb.*

Journalist Adam Ellsworth described Siegel's "Goodbye Surfing, Hello God" with his most famous example of rock journalism, but his most revolutionary was his article, "The Big Beat." It appeared in the *Playboy*-esque *Cavalier* magazine in 1965 and was one of the earliest writings he'd ever seen on the development of rock and roll, from slaves singing in chains on their way to America to Bob Dylan "going electric" at the Newport Folk Festival.

Then Jules' friend, Arthur Kretchmer, became *Cavalier's* managing editor. "When the editorial director later resigned," Kretchmer said, "there was a 24-hour hiatus before the new editor arrived." Siegel and Kretchmer had been discussing the possibility of publishing an issue on rock and roll, so to make it happen, Kretchmer went into the office at night and retyped the magazine's schedule to include their ideas.

When the new editorial started, Kretchmer handed him the schedules and said, "Here's what we're working on." The new editorial director suspected nothing and the rock and roll issue went ahead. Once the laughter died down, Jules talked for a good 25 minutes about some of the ups and downs of his writing career and how hard it is to make a living as any kind of a writer, let alone a "rock journalist." and the people who created it, seriously.

Now everybody writes about rock and roll that way. Jules was one of the people who did it first. "Goodbye Surfing, Hello God!" is Jules's most famous example of rock journalism, but I think his most revolutionary is his article "The Big Beat." It appeared in the Playboy-esque *Cavalier* magazine in 1965 and is one of the earliest writings I've ever seen on the development of rock and roll, from slaves singing in chains on their way to America to Bob Dylan "going electric" at the Newport Folk Festival.

Jules Siegel died of a heart attack on November 17, 2012 at the age of 77. He was a brilliant author, but neither *Rolling Stone* nor the *New York Times* honored him with an obituary. Not even a fake one.

COMIC STRIPS

Art Spiegelman tells me his work at *Cavalier* 50 years ago:

I was first invited into the mag to do two full-color comix pages in 1969 (when being printed in color was a Very Big Deal for me as was Getting Paid more than 25 bucks for a drawing), somehow in proximity to a big article on underground comix. It was around the time Vaughn Bode was made a regular contributor to the magazine, They were running some Crumb "Fritz the Cat" pages. All thanx to their hip, laid back and kind editor, Alan LeMond.

I also did some gag cartoons, short strips and occasional illustrations for *Cavalier* (one especially bad drawing for a story by Bruce Jay Friedman, I recall). My work in 1969, as an apprentice underground cartoonist taking too many drugs was really, really awful so I'm grateful for the editor's hip and laid-back kindness. But, hey, I was proud to be in a mag that published pieces by Pynchon, Manny Farber and you.

By the time I'd gotten incrementally better as a cartoonist in the first half of the 1970s I was regularly doing illustrations for soft-core fiction stories in *Cavalier's* low-rent sister mags, *Dude, Gent* and *Nugget* (even wrote a story or two there and got several of my San Francisco comix cronies (Spain Rodriguez, Bill Griffith and Justin Greene) illustration gigs with Alan for those mags as well.

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[Note in Wikipedia: *Maus* is a graphic novel by American cartoonist Art Spiegelman, serialized from 1980 to 1991. It depicts Spiegelman interviewing his father about his experiences as a Polish Jew and Holocaust survivor. The work employs postmodernist techniques and represents Jews as mice, Germans as cats, and Poles as pigs. In 1992, *Maus* won a Pulitzer Prize.]

COMiING AND GOING

I wrote some movie reviews for *Cavalier*. I recall that *Midnight Cowboy* was 50 years ago. I always went to two screenings. The first one I would go stoned with magic mushrooms. The second one I took notes. However, I got fired by *Cavalier*.

They declined to publish a particular column—my review of *MASH* as though it were a Busby Berkeley musical called *Gook Killers of 1970*— ostensibly on the grounds of bad taste, but I learned that three wholesalers had told the publisher they were pressured by the FBI and would refuse to distribute *Cavalier* if my name appeared in it.

On top of that, my name was on a list of sixty-five "radical" campus speakers, released by the House Internal Security Committee. The blacklist was published in the *New York Times*, and picked up by newspapers across the country. It might have been a coincidence, but my campus-speaking engagement-bookings stopped abruptly. It felt just like a film.

OH, WELL

It was over for me, but it had been fun—like the issue with only the one large red headline on the *Cavalier* cover: "BEAT 'EM SENSELESS FIRST"—THE FREE SPEECH CONTROVERSY, BY PAUL KRASSNER . . . "Ironically," I wrote, "it is this concept of the total education experience *on* campus which I believe to be the basic significance of the much-misunderstood free-speech imbroglio at the University of California in Berkeley."

The sit-in lasted till 3 a.m. Next day, October 1, 1964, ten tables were manned again, and a campus policeman approached one of the tables (manned by the Congress of Racial Equality) where a dozen persons were seated. One was singled out and placed under arrest. But before you could say nonviolent demonstration, the police car was surrounded, its captors reaching as many as 3,000 students. During the late evening, bored fraternity men gathered and tossed lighted cigarettes and eggs on those sitting in the plaza. The demonstrators responded with silence.

Next day, 450 police assembled on campus to remove the cop car and its arrested inhabitant, but an agreement to negotiate was reached and the demonstrators dispersed. One of the folk songs to come out of the Free Speech Movement incidentally, was *If I Negotiate With You,* to the tune of the Beatles' *If I Fell in Love With You.*

Over the next couple of months there was a series of sit-ins and attempted negotiations, and then, on December 2, the infamous Sproul Hall sit-in. It took twelve hours for 800 students to be arrested by some 600 instructors of a new course called Introductory Police Brutality. These were from the lab notes student took.

There was a freshman co-ed at Berkeley who—long after she had forgotten what some professor spouted during an official lecture about Dostoevsky's *Crime and Punishment*—would remember, with perhaps a twinge of frightened pride, learning from a fellow demonstrator that if she planned to go limp when the police arrested her, it would be an act of practical feminine foresight to remove the earrings from her pierced lobes in advance.

So, now in 2019, fighting over free speech has been happening heavily at Berkeley campus again. Meanwhile, Trump grabbed a pussy on the Statue of Liberty. *Cavalier,* anyone?

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ACKRELL
CAPITAL

2018 CANNABIS INVESTMENT REPORT

GLOBAL CANNABIS CONSUMERS

- The United Nations recently estimated that more than 180 million people globally between the ages of 15 and 64, or more than 4% of this age group, consume cannabis annually.
- At least 20 countries have implemented medical cannabis laws, including Australia, Canada, Colombia and Germany; countries without such laws include China, Japan, Russia and the United States.
- Although federally illegal in the United States, 46 states and the District of Columbia have passed at least one law that permits the manufacture, distribution, dispensing or possession of cannabis. While most of these laws are medical cannabis laws, 8 states have enacted recreational laws.
- Across all medical cannabis laws in the United States, cannabis is legally recognized as a form of therapy or medicine for more than 50 qualifying conditions, including Alzheimer's disease, anorexia, arthritis, cancer, chronic pain, epilepsy and post-traumatic stress disorder.
- California is poised to become the largest recreational cannabis market in the world with the implementation of its recreational law in January 2018—a watershed moment for the industry.
- The illegal cannabis market in the United States is estimated to be more than $45 billion annually. (We estimate that the 2017 U.S. state-legal cannabis market was $8.0 billion.) If federal legalization occurs, we believe that the legal market could be more than two times the size of the current illegal market, ultimately exceeding $100 billion annually.
- The cannabis industry provides a broad range of investment opportunities in both the public and private markets for sophisticated investors who are willing to take significant risks.

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Ackrell Capital Cannabis Team
Inside Back Cover: The Green Field 2018

About Ackrell Capital

Founded in 2003, Ackrell Capital is a leading independent investment bank focused on emerging growth companies. Ackrell Capital's expertise includes:

- Private Equity
- Mergers and Acquisitions
- Private Placements
- Corporate Development
- Cannabis, Consumer, Technology, Digital and Other Emerging Growth Industries

Ackrell Capital is based in San Francisco, CA. Ackrell Capital is a member of FINRA and SIPC.

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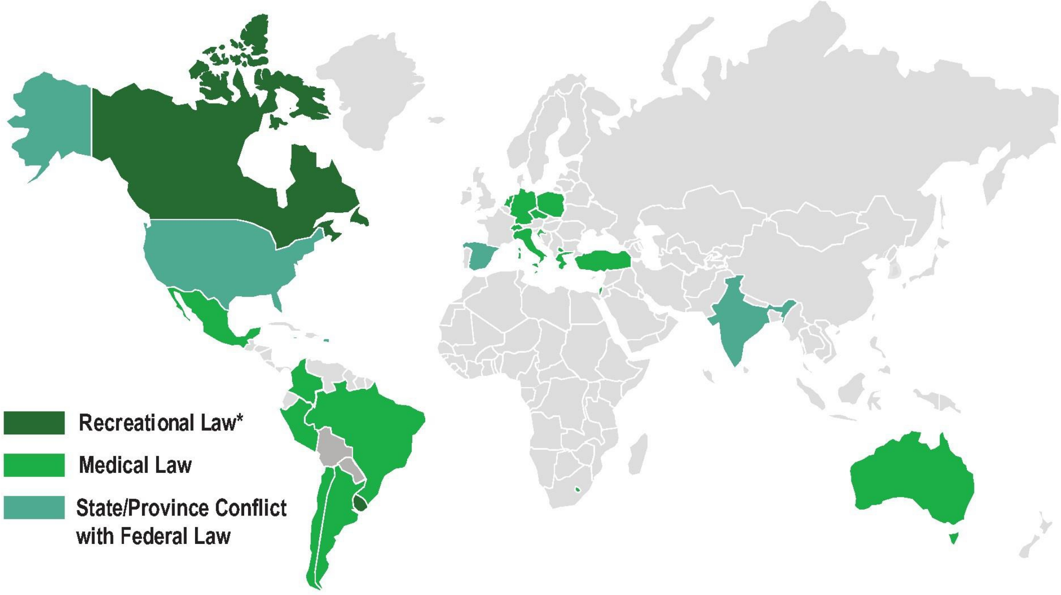
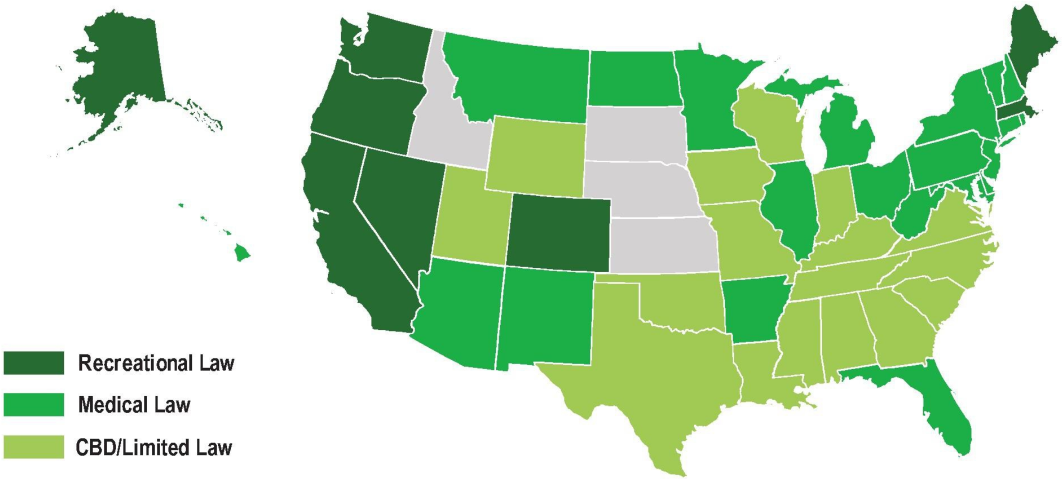
REPORT HIGHLIGHTS

Select Countries with Legalized Cannabis Access (January 2018)

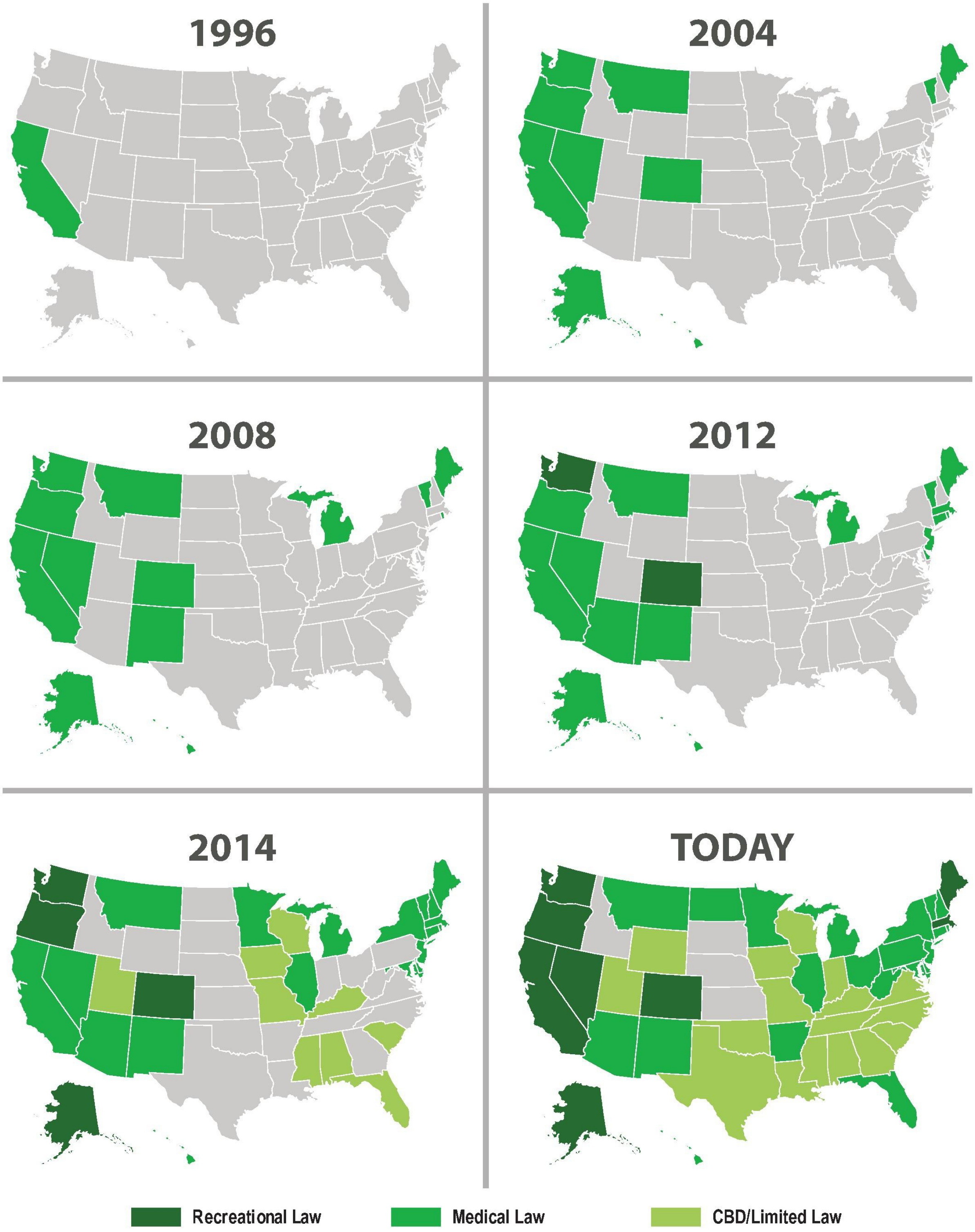

Recreational Law*
Medical Law
State/Province Conflict with Federal Law

*Canada currently has a medical law. Assumes Canada enacts a proposed recreational law in mid-2018.

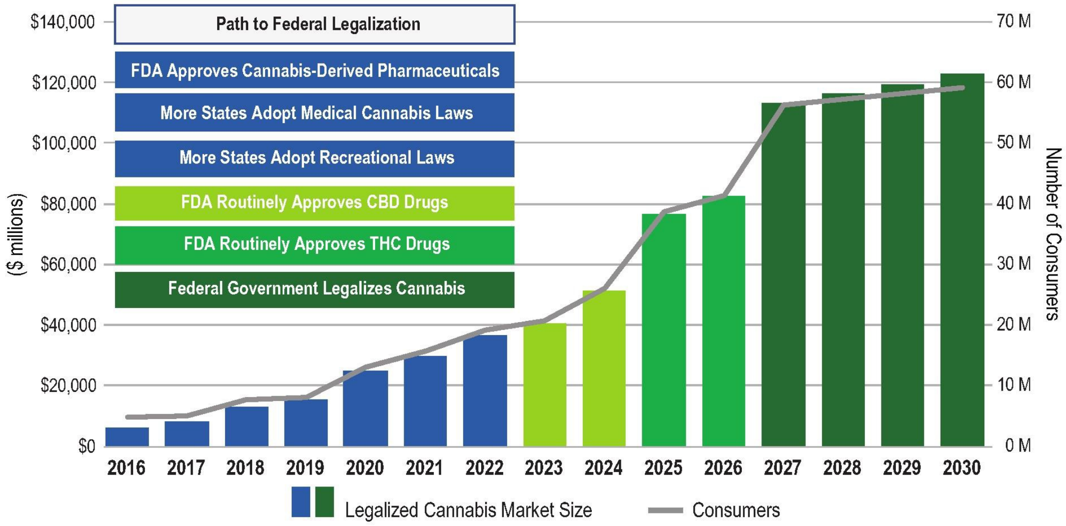
U.S. State Cannabis Laws (January 2018)


Recreational Law
Medical Law
CBD/Limited Law

Progression of U.S. State Cannabis Laws


1996
2004
2008
2012
2014
TODAY
Recreational Law
Medical Law
CBD/Limited Law

U.S. Legalized Cannabis Market



Source: Ackrell Capital. Assumes cannabis will be legalized federally by 2027. Cannabis may never be legalized federally in the United States.

Cannabis Industry Segments

Production

- 🟩 Cultivation
- ☐ Production Equipment and Supplies
- 🟩 Production and Testing Services

Business Solutions

- ☐ Business Software
- ☐ Business Services

Distribution

- 🟩 Dispensaries
- 🟩 E-Commerce
- 🟩 Distribution Services

Digital Media

- ☐ Online Content and Networking
- ☐ Online Directories

Consumer Products

- 🟩 Flower
- 🟩 Concentrates
- 🟩 Infused Products
- ☐ Vaporizers and Accessories
- 🟩 Pharmaceuticals

🟩 Involves “touching the plant” ☐ Does not involve “touching the plant”

Foreword

Ackrell Capital is pleased to present our 2018 Cannabis Investment Report. Much has happened in the nearly two years since we published our inaugural report: the cannabis industry grew significantly, companies in the industry raised large amounts of capital and their stock prices performed well, and the legalization movement continued worldwide as more countries and U.S. states implemented a framework for legal cannabis access. There was also a presidential election in the United States; its ultimate impact on the cannabis industry remains uncertain. What did not happen since we launched our inaugural report? Federal legalization: "marijuana" continues to be classified as a Schedule I controlled substance under the Controlled Substances Act in the United States.

In this new edition, we introduce an outlook on global cannabis markets, analyze capital markets for cannabis companies and present updated market estimates. We also expand on the first edition by providing more in-depth analyses of the various market segments within—and analyzing the legal issues pertinent to—the cannabis industry. The *Top 100 Private Cannabis Companies* list has been updated and our industry landscape, *The Green Field,* has been updated and expanded to include more than 500 companies.

Cannabis legalization has accelerated domestically and internationally. In the 2016 U.S. elections, four states, including California, legalized recreational cannabis (bringing the total number of states with recreational laws to eight) and an additional four states legalized medical cannabis. Cannabis use is now state-legal in some form in 46 states.

In January 2018, California will implement its recreational law, making it the largest market globally for the recreational use of cannabis. Similarly, Canada is expected to pass its recreational law in mid-2018. And in 2017, Germany became the most populous country in the world to pass a medical cannabis law.

Cannabis has mass consumer appeal around the world. (According to the United Nations, more than 180 million people per year use cannabis and it is the most-consumed drug worldwide). While it is clear that there is significant demand for cannabis, less clear is how quickly illegal markets will transition to legal markets, as well as the extent to which legalization may increase overall demand.

We continue to believe that it is a question of when—not if—the U.S. federal prohibition on cannabis will end. We believe that a path toward federal legalization exists and we believe this process has commenced. According to Gallup, 64% of Americans today believe that cannabis use should be legal.

Who is the cannabis consumer? It is the 80-year-old cancer patient ingesting cannabis to treat side effects of chemotherapy. It is the 12-year-old child using cannabis extracts on a doctor's recommendation to reduce epileptic seizures. It is the 30-something mother or father seeking to relax after a full day. It is a group of 20-year-olds on a Friday night heading to a concert. It is the millions of people suffering from anxiety and depression. It is the millions of people treating chronic pain and nausea. It is the millions of people using cannabis recreationally.

Our team has met with more than 1,000 companies in the cannabis industry. We understand the opportunities and challenges facing the industry, and we are happy to provide our insights.

Sincerely,

The Ackrell Capital Cannabis Team

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CHAPTER I

Executive Summary

Global Cannabis Consumers

Cannabis has mass consumer appeal around the world. Millions of people use cannabis recreationally. Millions more use it medicinally. In aggregate, across all state medical cannabis laws in the United States, cannabis is legally recognized as a form of therapy or medicine for more than 50 medical conditions, including Alzheimer's disease, anorexia, arthritis, cancer, chronic pain, epilepsy and post-traumatic stress disorder. Similar to the alcohol and pharmaceutical markets, we believe that the total addressable consumer market for cannabis consists of a significant portion of the global adult population.

Cannabis is the most widely cultivated, produced, trafficked and consumed drug worldwide, according to the United Nations Office on Drugs and Crime (UNODC). In 2003, the UNODC estimated that the global illegal cannabis market was $113 billion, with 160 million consumers. The UNODC continues to estimate the number of cannabis users worldwide and recently estimated that 183 million people globally between the ages of 15 and 64, or more than 4% of this age group, consumed cannabis in 2015.

In 2010, the RAND Corporation (RAND) estimated that the U.S. illegal cannabis market was $40 billion. Adjusting this estimate solely for inflation and population growth, the U.S. illegal market would now be approximately $48 billion.

Both the UNODC and RAND acknowledge the challenges inherent in studying an illegal consumer market, and both allow significant room for error in their estimates. However approximate, their estimates make clear that there is significant global demand for cannabis. Less clear is how quickly illegal markets will transition to legal markets, as well as the extent to which legalization may increase overall demand.

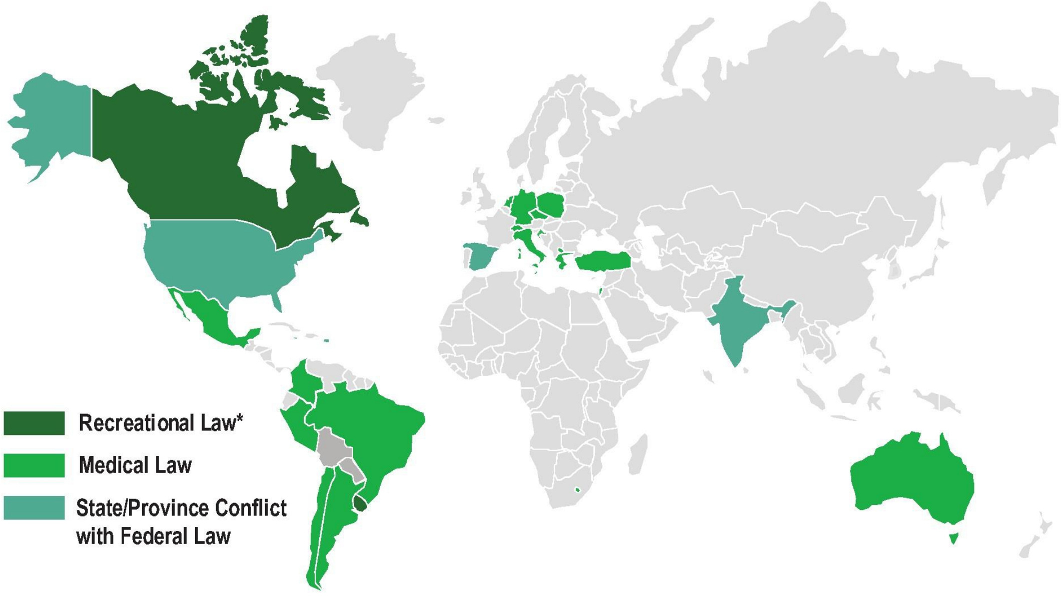
We believe that the growth of the global legal cannabis industry will be driven by increasing penetration in largely untapped "mainstream" consumer markets, and that the legal industry could grow to more than two times the estimated size of the current illegal market. We believe that cannabis will eventually become federally legal in the United States, for recreational enjoyment by adults and for use in a broad range of safe drugs and therapeutic products. After U.S. federal legalization, we believe that the U.S. market will exceed $100 billion annually, with more than 50 million consumers. Globally, we estimate that the legal cannabis market has the potential to reach $500 billion annually, approaching one billion consumers.

The Global Legal Cannabis Market

Cannabis legalization is gaining momentum around the world. This momentum is driven primarily by the increasing recognition that cannabis may have a range of legitimate medicinal benefits and therapeutic applications. At least 20 countries now have medical laws that facilitate patient access to cannabis or cannabis concentrates for treating specified medical conditions. Notable countries with such medical laws include Australia, Canada, Colombia and Germany; countries without such laws include China, Japan, Russia and the United States. (Contrary to U.S. federal law, 29 states, encompassing 62% of the U.S. population, permit the production and possession of cannabis or concentrates for use in treating a broad range of qualifying medical conditions.) While the merits of medical cannabis are currently driving legalization, we believe that—like Uruguay and numerous U.S. states—other countries will ultimately enact legislation permitting the production, sale and use of recreational cannabis. (Canada is widely expected to do so in mid-2018.)

The following world map illustrates select countries that (i) have enacted medical laws that facilitate patient access to cannabis or concentrates for treating specified medical conditions, (ii) have enacted recreational laws that permit the commercial production and sale of cannabis to adults for recreational and other uses, or (iii) include a state or province that has a cannabis law or policy in conflict with federal law.

Select Countries with Legalized Cannabis Access (January 2018)



*Canada currently has a medical law. Assumes Canada enacts a proposed recreational law in mid-2018.

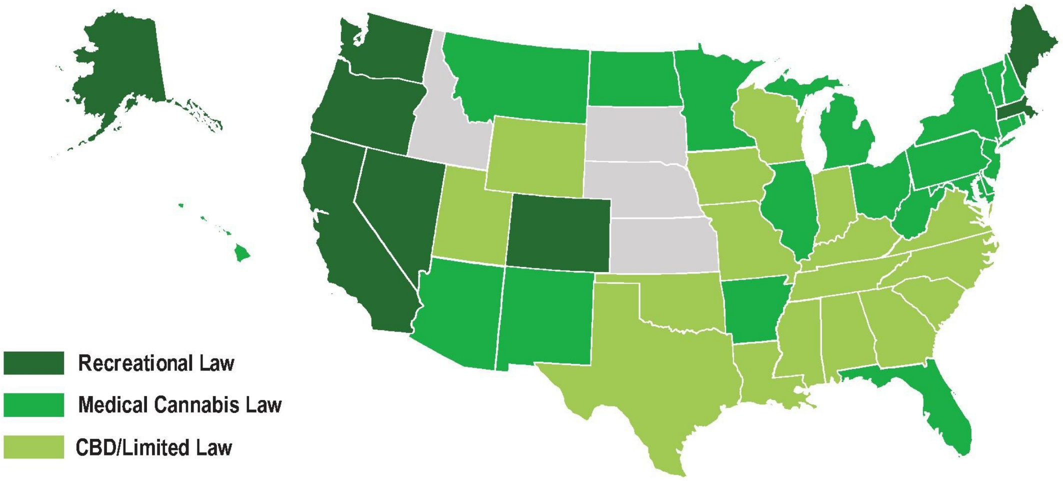
The U.S. State-Legal Cannabis Market

The legal landscape for the cannabis industry in the United States continues to be characterized by conflict between federal prohibition and the steady advance of state legalization. According to federal policy, Americans can access tobacco, alcohol and prescription drug products that kill thousands each year, but they cannot access cannabis because it is a dangerous drug with no currently accepted medical application in the United States (notwithstanding the federal government holds a U.S. patent for methods of treating diseases with cannabinoids). Meanwhile, 46 U.S. states have enacted at least one law that permits the manufacturing, distribution, dispensing or possession of cannabis or concentrates. These laws fall into three general categories:

- 29 U.S. states (and the District of Columbia) have enacted medical cannabis laws that permit the production and possession of cannabis or concentrates for use in treating a broad range of qualifying medical conditions.
- 19 U.S. states have enacted narrow CBD/limited laws that permit possession of small amounts of low-THC/high-CBD cannabis concentrates for use in treating a few serious medical conditions—in particular, severe forms of childhood epilepsy.
- 8 U.S. states have enacted recreational laws that permit the commercial production and sale of cannabis to adults for recreational and other uses.

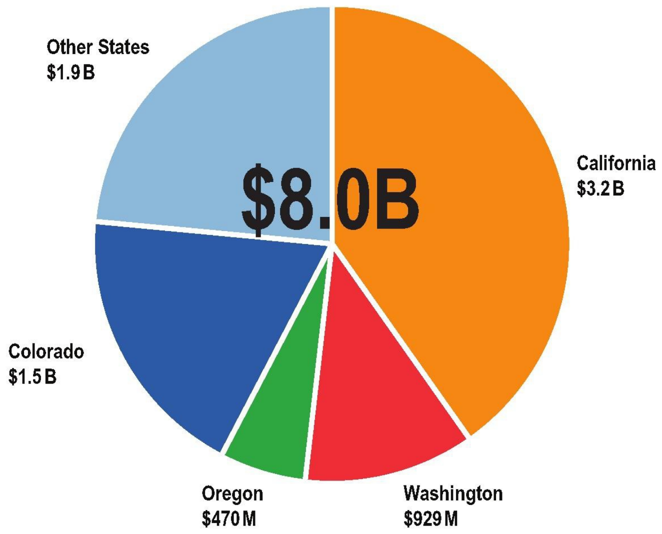
The following map of the United States shows states with medical cannabis laws, CBD/limited laws or recreational laws (a state with more than one of these laws is represented on the map by its most permissive law).

U.S. State Cannabis Laws (January 2018)



The U.S cannabis industry has proven adept at navigating this federal-state conflict, and is experiencing rapid growth despite it. We estimate that the 2017 U.S. state-legal cannabis market was $8.0 billion, with more than four million consumers. While the overall state-legal market has grown significantly, the addressable market has been constrained due to the lack of access to purely recreational consumers and the sometimes-narrow scope of medical conditions that qualify a patient for access to medical cannabis. The breakdown of this market estimate by state is shown in the following chart.

2017 U.S. State-Legal Cannabis Market Estimate



Source: Ackrell Capital

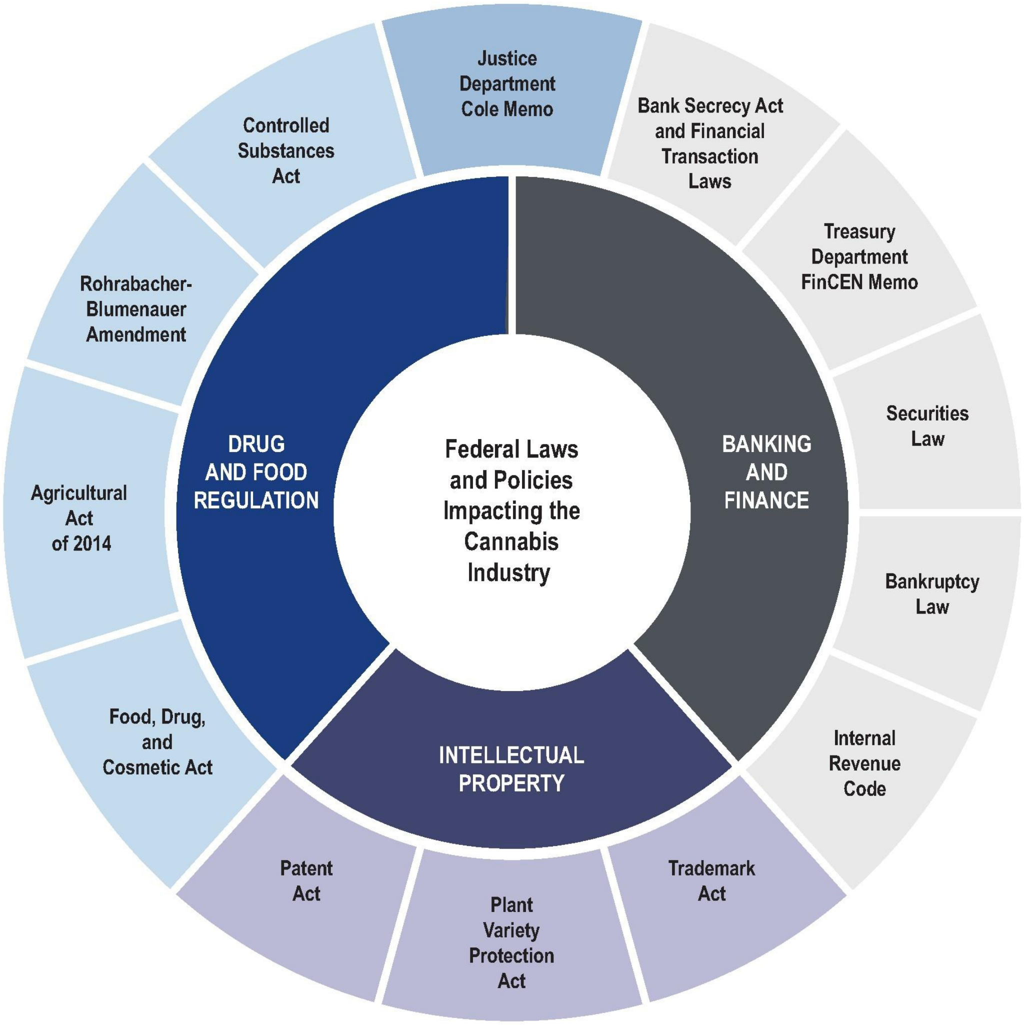
U.S. Federal Law

Current federal law effectively prohibits all cannabis use and all commercial cannabis activity in the United States. Producing, selling and possessing cannabis are federal crimes. No cannabis-derived drug has ever been federally approved for use in treating any medical condition. Otherwise legitimate business transactions conducted by cannabis companies—and their banks, for those who can access banking services—are legally suspect. Certain intellectual property and bankruptcy protections critical to many U.S. businesses are not available to cannabis companies. Cannabis companies pay federal income tax at effective rates significantly higher than other businesses.

Despite official prohibition, however, federal policies and laws recently passed by Congress have carved out a limited space in which the state-legal cannabis industry has managed to thrive. Enforcement policies published by the U.S. Department of Justice have unofficially invited cannabis business to proceed if certain conditions are respected. The U.S. Department of the Treasury established reporting policies that create room for banks to service the cannabis industry. Federal budget legislation has prevented allocated funds from being used to prosecute conduct that complies with state medical cannabis laws. And recent developments indicate the federal government may be pursuing policies and practices that create space for cannabis research and approval of cannabis-derived drugs.

The following chart shows three general areas of federal law that impact the cannabis industry—food and drug regulation, banking and finance, and intellectual property—as well as specific laws and federal policies related to each area. (We expand on these laws, regulations and policies in Chapter IV, U.S. Legal Landscape.)

Federal Laws and Policies Impacting the Cannabis Industry


Federal Laws and Policies Impacting the Cannabis Industry
DRUG AND FOOD REGULATION
BANKING AND FINANCE
INTELLECTUAL PROPERTY
Justice Department Cole Memo
Bank Secrecy Act and Financial Transaction Laws
Treasury Department FinCEN Memo
Securities Law
Bankruptcy Law
Internal Revenue Code
Trademark Act
Plant Variety Protection Act
Patent Act
Food, Drug, and Cosmetic Act
Agricultural Act of 2014
Rohrabacher-Blumenauer Amendment
Controlled Substances Act

The Path to Federal Legalization

We believe that the variable which will most impact the future size of the U.S. legal cannabis market is the federal legalization process. How and when federal legalization occurs will impact other primary drivers of the market, including the number of eligible consumers, penetration rates and consumer spending. We predict six developments relating to federal legalization: (1) the U.S. Food and Drug Administration (FDA) will begin approving individual pharmaceutical-grade drugs derived from cannabis; (2) more states will adopt medical cannabis laws; (3) more states will adopt recreational laws; (4) the FDA will adopt routine approval procedures for drugs with extracts of low-THC/high-CBD cannabis varieties; (5) the FDA will adopt routine approval procedures for drugs with extracts of high-THC cannabis varieties; and (6) cannabis parts and derivatives will be removed from the CSA schedules (either incrementally, starting with CBD, or all at once) and will be fully legal for medical and recreational purposes. (We expand on these predicted developments in Chapter IV, U.S. Legal Landscape.)

We do not predict that these developments necessarily will occur in the order presented. We do expect some of them to develop in parallel, and none of them depends fundamentally on any other. For example, Congress could cause development (6) at any time by passing legislation that removes cannabis from the CSA schedules and establishes a national framework for recreational and medical cannabis regulation. Developments (1) through (3) largely reflect incremental developments within the existing legal environment. We do not expect developments (4), (5) or (6) to occur during the current presidential term, but we believe that there is a reasonable chance development (4) could begin within the next five years and development (5) could occur within two years thereafter. In total, we believe it could take up to 10 years or more before the federal legalization process reaches development (6) and cannabis becomes fully legal under federal law. For our market estimates, we assume (i) development (4) begins in 2023, (ii) development (5) follows two years thereafter and (iii) development (6) occurs by 2027 and cannabis becomes fully legal in the United States.

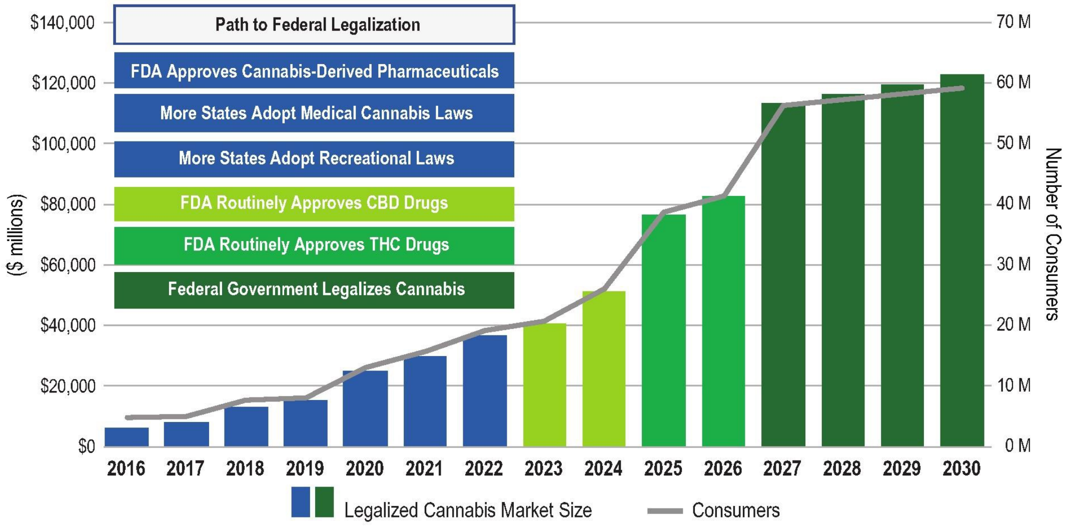
Path to Federal Legalization

1. The U.S. Food and Drug Administration will begin approving individual pharmaceutical-grade drugs derived from cannabis.
2. More states will adopt medical cannabis laws.
3. More states will adopt recreational laws.
4. The FDA will adopt routine approval procedures for drugs with extracts of low-THC/high-CBD cannabis varieties.
5. The FDA will adopt routine approval procedures for drugs with extracts of high-THC cannabis varieties.
6. Cannabis parts and derivatives will be removed from the CSA schedules and will be fully legal for medical and recreational purposes.

We believe that federal legalization will trigger rapid growth in the U.S. market, propelled by interstate commerce, access to the federal banking system and acceleration of the cannabis-derived pharmaceuticals market. A change in the federal status of cannabis in the United States will not only drive U.S. market growth, but should provide a significant catalyst to the market worldwide.

The following graph illustrates the timeline of our predicted developments and the estimated impact on the U.S. legalized cannabis market. As discussed on page 175, readers are cautioned to not place undue reliance on our predictions or estimates. Almost certainly, our predictions and estimates will prove inaccurate in some respects.

U.S. Legalized Cannabis Market



Source: Ackrell Capital. Assumes cannabis will be legalized federally by 2027. Cannabis may never be legalized federally in the United States.

To Watch in 2018

We believe that the following events will impact the legalized cannabis industry in 2018.

To Watch in 2018

- Increasing Recreational Legalization
- Cannabis Consumer Experience goes "Mainstream"
- FDA Approval of Cannabis-Derived Pharmaceuticals
- Commoditization of Cannabis Flower
- Access to Banking Services for U.S. Cannabis Companies
- Increasing Strategic Investor Activity; Continuing Funding Gap

Increasing Recreational Legalization

We expect 2018 will be a watershed year for recreational markets, both in the United States and internationally. California will begin implementing its new recreational law in January 2018, and Canada's proposed recreational law is widely expected to be approved in some form by mid-2018.

California, which has a population of 38 million people and receives 250 million visitors annually, is poised to transition from the world's largest medical cannabis market to the largest recreational market with the implementation of its recreational law in January 2018.

In each of the three largest U.S. states to implement recreational laws—Colorado, Oregon and Washington—the size of the legalized cannabis market expanded significantly, doubling the size of the overall market in each of these states in the first full calendar year after implementation. The world has yet to experience a legalized recreational cannabis market in a jurisdiction as large as California, and how the supply chain, consumer response and regulatory framework will coalesce in such a market remains to be seen.

Nonetheless, we believe that California's state-legal market may double from an estimated $3.2 billion in 2017 to approximately $6.5 billion in 2018.

Canada has assumed the role of a global leader of cannabis legalization. Although Canada's legal cannabis market is presently limited to medical cannabis, it is currently the largest federally legal cannabis market in the world, estimated at $1.5 billion in 2017. In April 2017, a proposed recreational law was introduced in the Canadian parliament; the proposed Cannabis Act would allow adults to purchase cannabis from federally licensed producers and to possess and share cannabis with other adults. The Cannabis Act is widely expected to be approved in some form by the Canadian parliament by mid-2018. If approved, Canada would be the largest country in the world to legalize recreational cannabis on a national level, and we believe that the implementation of the Cannabis Act would significantly expand the size of Canada's overall market. Canada has demonstrated that by providing a national legal framework for cannabis, companies operating legally within the industry have had a clear "first to market" advantage, allowing them to raise significant amounts of capital and to pursue domestic and international expansion opportunities.

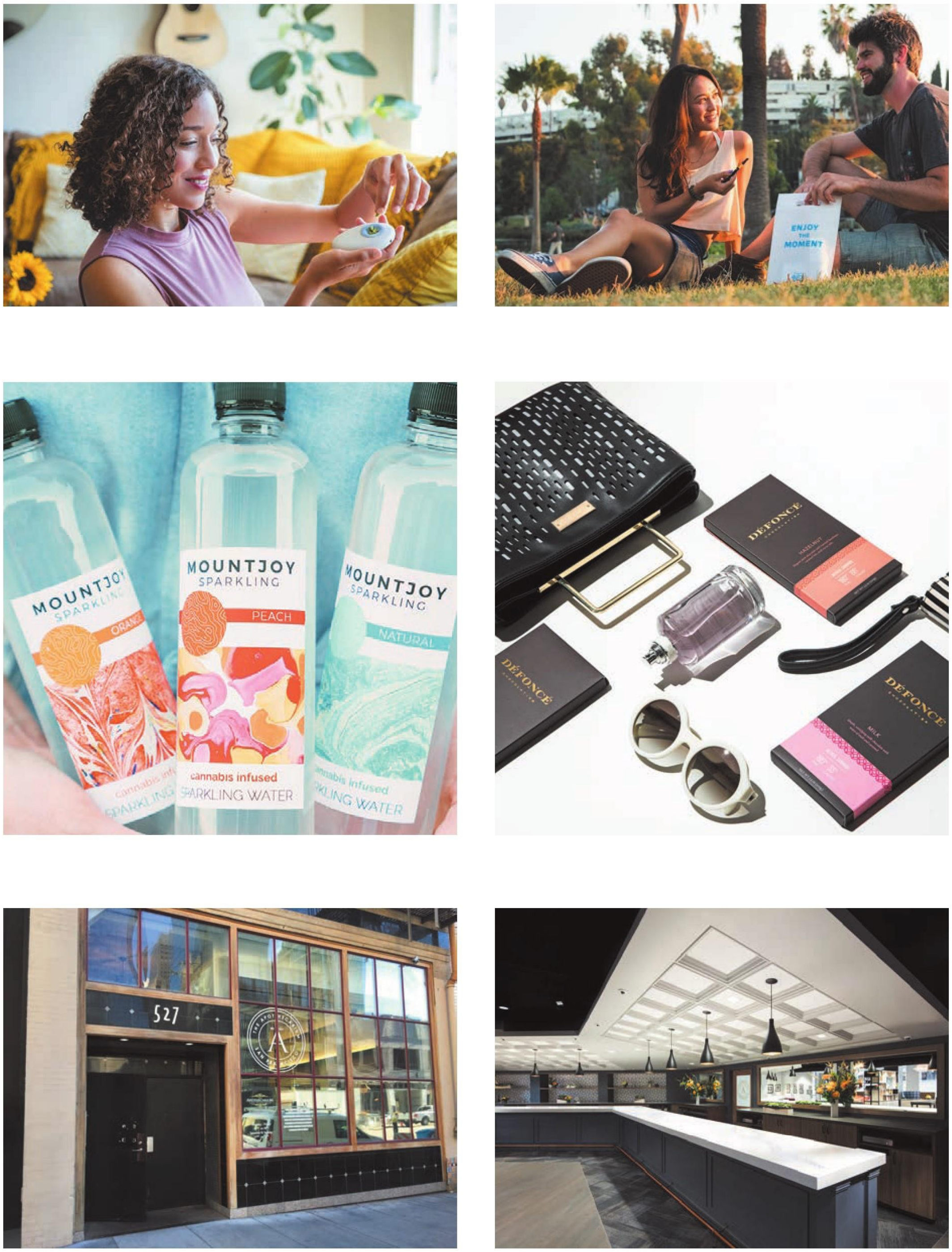
If these recreational laws stimulate demand, as expected, and are otherwise viewed as successful, we expect more U.S. states and additional countries to follow suit with similar laws. In the United States, legislatures in eight states (Arizona, Delaware, Florida, Michigan, New Jersey, Ohio, Rhode Island and Vermont) are expected to introduce ballot measures or explore regulatory frameworks for recreational cannabis in 2018.

Cannabis Consumer Experience Goes "Mainstream"

Cannabis consumer product companies and retailers are rapidly evolving to meet the needs of the "mainstream" cannabis consumer. Cannabis consumers are no longer limited to smoking flower with joints, pipes or bongs, but have their choice of an increasing variety of products, including concentrates, infused products and topicals. Products coming to market increasingly address the attributes demanded by the modern consumer—greater discretion, ease of use, product safety and accurate dosing. To attract more mainstream customers, companies have responded to these demands with increasingly sophisticated packaging and advertising.

Where a consumer purchases a product can be as important as the product itself. In the United States, cannabis dispensaries play a critical role by providing consumers with access to a wide variety of products and "high-touch" education and sales services. Merchandising and branding have become more prominent as dispensaries increasingly seek to provide consumers with an experience similar to other mainstream retail shopping experiences. In 2018, we see an opportunity for cannabis dispensaries to drive consumer penetration and mainstream acceptance of cannabis by establishing storefronts in malls and other high-profile retail locations.

In 2018, we believe that product innovation and advancements in cannabis varieties, concentrates, infused products, vaporizing technology and cannabis-derived pharmaceutical products will drive consumer adoption and spending. However, because numerous product categories have low barriers to entry, we expect a significant influx of cannabis brands that will aggressively compete for limited display space in dispensaries. We also believe product differentiation and availability will be more prevalent in legalized cannabis markets and will drive consumer transition from illegal to legal markets.


ENJOY
THE
MOMENT
MOUNTJOY
SPARKLING
ORANGE
PEACH
NATURAL
cannabis infused
SPARKLING WATER
DÉFONCE
HAZELNUT
MILK
527

“Mainstream” Consumer Experience

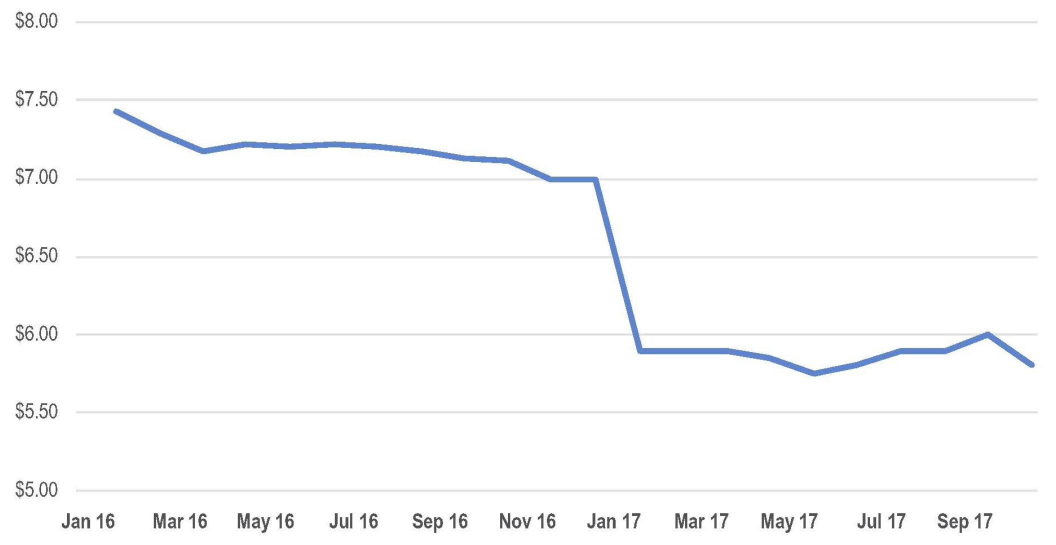
FDA Approval of Cannabis-Derived Pharmaceuticals

The FDA's first-ever approval of a cannabis-derived pharmaceutical may occur in 2018. The FDA has previously approved several drugs with chemically synthesized cannabinoids or cannabinoid-like compounds, but has never approved a drug derived from the cannabis plant. In October 2017, U.K.-based GW Pharmaceuticals submitted a New Drug Application (NDA) to the FDA for Epidiolex, an oral formulation of cannabis-derived cannabidiol, or CBD, intended to treat severe forms of childhood epilepsy. (GW Pharmaceuticals also manufactures Sativex, a mouth spray used for treatment of spasticity caused by multiple sclerosis; it includes THC and CBD derived from cannabis. Sativex was first approved for use in the United Kingdom in 2010, and has been approved for use in at least 30 countries, but not in the United States.) If the FDA approves Epidiolex, such a precedent could be followed by similar approvals in the United States for other cannabis-derived drugs and result in a significant increase in the medical use of cannabis by consumers.

Commoditization of Cannabis Flower

The supply of cannabis in the United States has increased considerably with expanded state legalization. This increase has started to dampen retail and wholesale prices in various markets. While retail prices vary across the country, an examination of the price per gram of cannabis flower, or "bud," in the three largest states to implement recreational laws—Colorado, Oregon and Washington—reveals a downward trend. The following graph shows the average price per gram of cannabis flower in these three states since the beginning of 2016.

Consumer Pricing Trends: Cannabis Flower Price per Gram



Source: BDS Analytics

As prices decline, we are starting to see closer price parity between state-legal and illegal markets (in the United States, cannabis is generally priced lower in illegal markets than in state-legal markets). We believe that lower retail prices in state-legal markets will accelerate consumer transition from illegal to state-legal markets and drive increased overall penetration rates. However, state and local taxes will continue to impact pricing for cannabis products in state-legal cannabis markets, which will impede the transition to legal markets.

In international markets, cannabis cultivators in South America, particularly in Colombia and Uruguay, are expected to proceed with large-scale operations in 2018, with the anticipated supply of cannabis entering the market in late 2018 or early 2019. These operations are designed to produce output that exceeds local demand, and South American countries are expected to export products to other legal markets, such as Canada and Germany. As legal markets increasingly import cannabis products, we anticipate downward-pricing pressure for cannabis in both the wholesale and retail markets. Cannabis cultivators in domestic markets that permit imports may be challenged by large, low-cost cannabis producers in South America and elsewhere. While these dynamics are expected to impact international cannabis markets, they should not materially affect prices in the United States until the importation of cannabis products becomes legal under federal law.

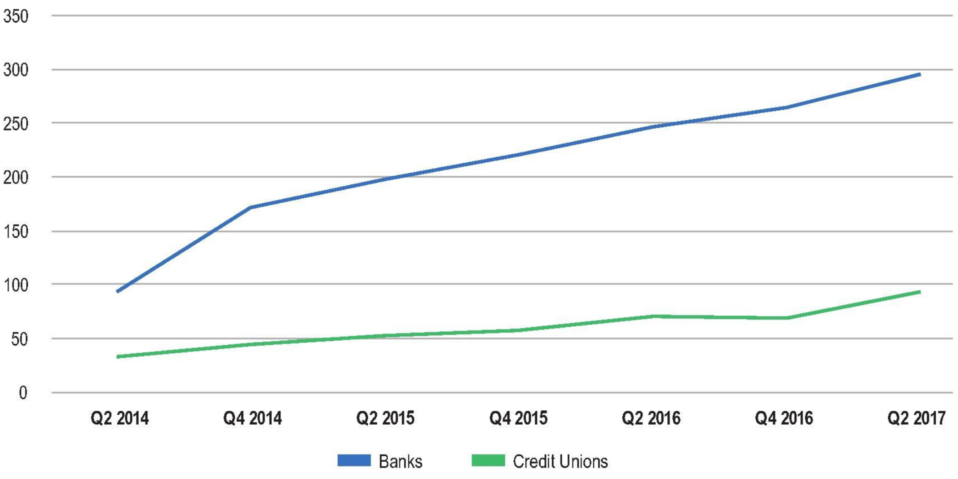
Access to Banking Services for U.S. Cannabis Companies

Because most cannabis-related businesses in the United States violate federal law, most domestic financial institutions do not provide services to participants in the cannabis industry. Companies in the cannabis industry may not be able to open or maintain bank accounts or access other products and services—such as credit facilities, payment processing and insurance coverage—typically provided by traditional financial institutions. A lack of access to banking and other traditional financial products and services continues to impede the growth of the industry; it increases the time, effort and expense related to ongoing operations and increases risks associated with cash transactions and the use of alternative products and services.

The California State Treasurer's Cannabis Banking Working Group—a panel convened by California State Treasurer John Chiang that includes representatives from the cannabis industry and financial institutions, and government tax collection, law enforcement and regulatory agencies—issued a report in November 2017 on the cannabis industry's banking challenges. In the report, the State Treasurer's Office stated that the cannabis industry's lack of access to banking services is one of the biggest threats to the success of the state's recreational cannabis law, which is scheduled for implementation starting in January 2018.

The U.S. Bank Secrecy Act (BSA) requires financial institutions to file "suspicious activity reports" (SARs) with the Financial Crimes Enforcement Network (FinCEN) regarding customers engaged in "marijuana-related business." From February 2014 through June 2017, FinCEN received a total of 33,692 marijuana-related SAR filings from a total of 390 banks and credit unions (out of approximately 11,500 depository institutions). The following graph based on FinCEN data shows the number of banks and credit unions making such filings. While the percentage of the total number of depository institutions serving the cannabis industry remains small, the growing number of depository institutions making SAR filings indicates that cannabis businesses increasingly are accessing the federal banking system despite federal law.

Depository Institutions Making Marijuana-Related SAR Filings



Source: Financial Crimes Enforcement Network

FinCEN has published guidance outlining how financial institutions can, consistent with their BSA obligations, provide services to marijuana-related businesses. However, this guidance does not provide financial institutions with a legal defense for any violation of federal law. Consequently, financial institutions willing to serve the cannabis industry tend to be smaller institutions, such as credit unions and state-chartered banks. "Big" banks generally do not serve, or are not willing to state publicly that they serve, the cannabis industry. For example, according to American Banker, a spokeswoman for Wells Fargo Bank recently said the bank's policy worldwide is to not bank marijuana businesses.

However, as cannabis-related companies increasingly participate in the formal U.S. economy, the notion of what constitutes a "marijuana-related business" is being blurred, and banks are finding it more difficult to institute and follow their own policies. For example, it may be straightforward for a bank to identify and refuse to transact with a cannabis cultivator, but the bank may be unsure whether it can provide services to (or whether it is providing services to) the cultivator's accountant, landlord or investors. For example, Constellation Brands, Inc. (NYSE: STZ), a large beverage company, recently invested approximately $190 million in Canopy Growth Corporation (TSX: WEED), a Canadian cannabis company. According to public filings, Constellation Brands has credit agreements with a number of large financial institutions, including Bank of America, Bank of the West, Fifth Third Bank, Goldman Sachs Bank, JPMorgan Chase Bank, PNC Bank, SunTrust Bank and Wells Fargo Bank. How these institutions respond to the investment by Constellation Brands and other similar transactions may indicate how large financial institutions will interact with the industry in the foreseeable future.

In the current environment, we believe more financial institutions will start to provide some level of service to the cannabis industry. We also agree with the view of the California State Treasurer's Office, as expressed in the working group's report, that it is only a matter of time until cannabis businesses have normal access to banking services. However, if the U.S. federal government were to change its current practice and aggressively enforce existing federal cannabis laws, including penalizing financial institutions for serving the cannabis industry, it would have a dampening effect on the industry both in the United States and abroad.

Increasing Strategic Investor Activity; Continuing Funding Gap

We share the belief held by many that, ultimately, established companies from analogous industries—alcohol, pharmaceutical, tobacco and consumer products—will enter the cannabis industry through minority investment, by acquisition or otherwise. We have already seen examples: Constellation Brands' investment in Canopy Growth referenced above and the more than $400 million spent by The Scotts Miracle-Gro Company (NYSE: SMG) to acquire soil, fertilizer, hydroponic equipment and lighting companies that supply the cannabis industry. These types of transactions help validate investor enthusiasm for and valuations in the cannabis industry, and we expect similar transactions to occur with increasing frequency during 2018 and beyond.

Retail investors and an increasing number of family office and strategic investors are providing most of the investment capital to the cannabis industry. Cannabis-related companies raised more than $2.0 billion in the public and private markets in 2017, but many of the financings were small—less than $5 million. We expect that many institutional investors (most notably, the traditional venture capital and private equity communities) will not invest in the industry until it matures and the legal environment becomes more favorable.

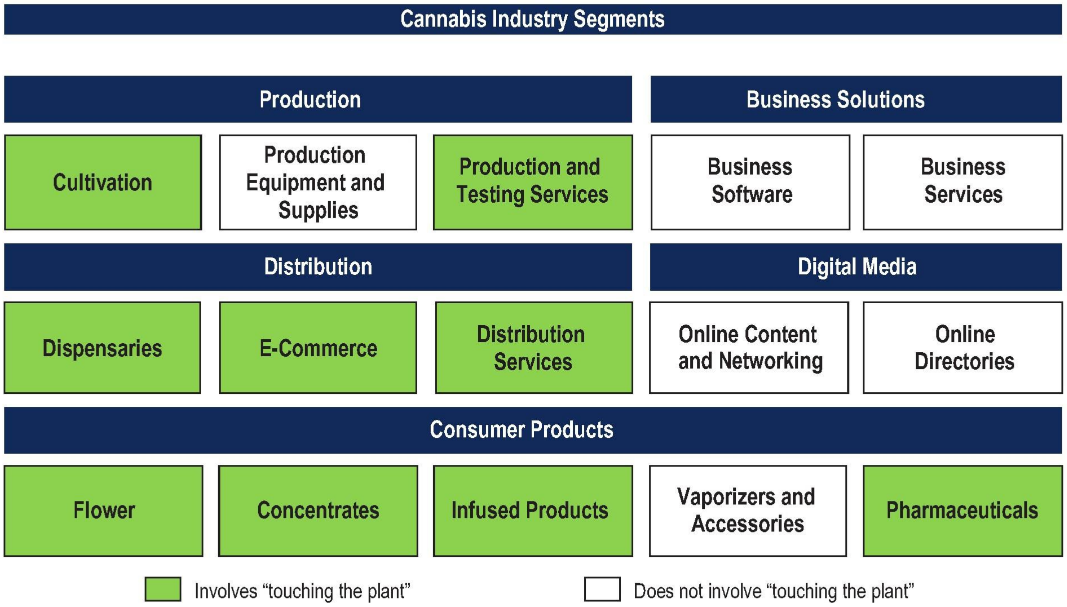
Without institutional support for the cannabis industry, a funding gap exists—companies are seeking more capital than investors are willing or able to provide. We believe that this is especially true in the private markets, where many companies struggle to raise necessary financing. Although capital may be available for select issuers in both public and private markets, we believe that without participation from institutional investors, the cannabis industry will continue to face a significant funding gap for the foreseeable future.

■ Investment Outlook

Hundreds, if not thousands, of cannabis-related companies are seeking to raise capital—thus presenting investment opportunities for sophisticated investors who want to participate in the cannabis industry. Investors have their choice of investing in the more than 300 publicly traded cannabis-related companies, or in the significant number of private companies raising capital. Investors may also choose among stock markets (both within the United States and internationally), type of security (equity versus debt) and type of company (companies across all segments of the industry are raising capital).

Most of the cannabis-related companies raising capital—even publicly traded companies—are in early stages of development, have de minimis revenue and are not profitable. More than 85% of publicly traded cannabis-related companies have annual revenue less than $5 million, and less than 5% have annual revenue greater than $25 million.

To help investors better evaluate investment opportunities in the cannabis industry, we currently define five primary segments: production, distribution, consumer products, business solutions and digital media. We further divide each segment into multiple subsegments. Each segment has unique opportunities and risks. For example, companies that possess, manufacture or distribute cannabis (commonly known as “touching the plant”) face risks related to violating federal law—and state-law compliance obligations—not generally faced by providers of business software or digital media content. Many businesses operate in multiple segments, and we expect industry leaders to emerge in each segment. The five primary segments and their subsegments are illustrated in the following chart.


Cannabis Industry Segments
Production
Business Solutions
Cultivation
Production Equipment and Supplies
Production and Testing Services
Business Software
Business Services
Distribution
Digital Media
Dispensaries
E-Commerce
Distribution Services
Online Content and Networking
Online Directories
Consumer Products
Flower
Concentrates
Infused Products
Vaporizers and Accessories
Pharmaceuticals
🟩 Involves “touching the plant”
☐ Does not involve “touching the plant”

In our view, valuations and stock price fluctuations in the cannabis industry continue to be driven more by expectations for the cannabis industry in general than by individual company fundamentals. Today, in the public markets for cannabis-related companies, trading volumes are too low, trading prices are too volatile and operating histories are too limited to place any reliance on current valuation levels. We believe that this dynamic will continue until cannabis-related companies have matured and start to realize meaningful revenue, profitability and other financial metrics that will allow investors to evaluate companies within the industry by more traditional methodology.

It is still too early to know how the cannabis industry or its sectors will be valued in the future. It may come to pass that companies in the cannabis industry are valued comparably to public companies in industries with similar characteristics, such as the alcohol, tobacco, pharmaceutical and consumer products industries, especially as companies from those industries look to enter the cannabis industry, through acquisition or by other means. What is clear now, however, is that investors will continue to have a range of investment opportunities from which to choose in this rapidly growing, dynamic industry.

CHAPTER II
Cannabis Science 101

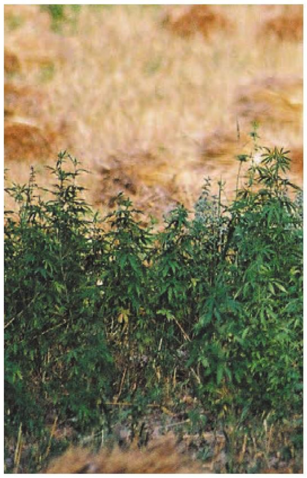
The Cannabis Plant

Cannabis is a genus of flowering plant indigenous to Eurasia. For millennia, humans have consumed cannabis for therapeutic, medicinal, social or spiritual purposes and have used the seeds and fibrous stalks of the cannabis plant to produce goods such as rope, paper, clothing and soap.

There are at least three principal cannabis species: *Cannabis sativa, Cannabis indica* and *Cannabis ruderalis.*[1] These three species can be distinguished by their plant structures and leaves. Sativa plants are generally tall, thin and wispy; indica plants tend to be shorter and bushier than sativa plants; and ruderalis plants are shaggy and the shortest of all three species. The following pictures depict the *Cannabis sativa, Cannabis indica* and *Cannabis ruderalis* plants and their leaves.

Cannabis Sativa Plant

Cannabis Indica Plant



Cannabis Ruderalis Plant

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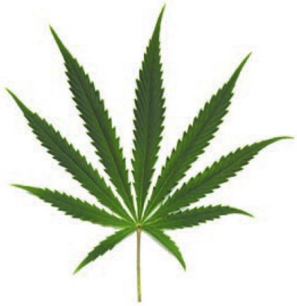
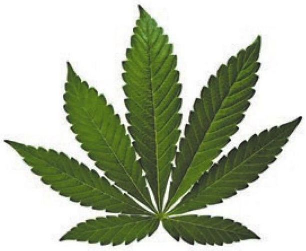
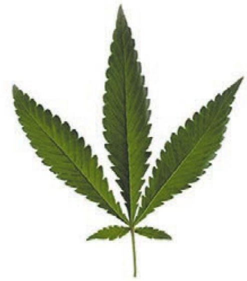
[1] Botanists disagree about whether sativa, indica and ruderalis are distinct species or are instead distinct subspecies of a single plant species. Some botanists propose renaming these three species to reflect their geographic origins. This report takes no position on these botanical debates; it merely adopts one set of commonly used nomenclature.



Cannabis Sativa Leaf



Cannabis Indica Leaf



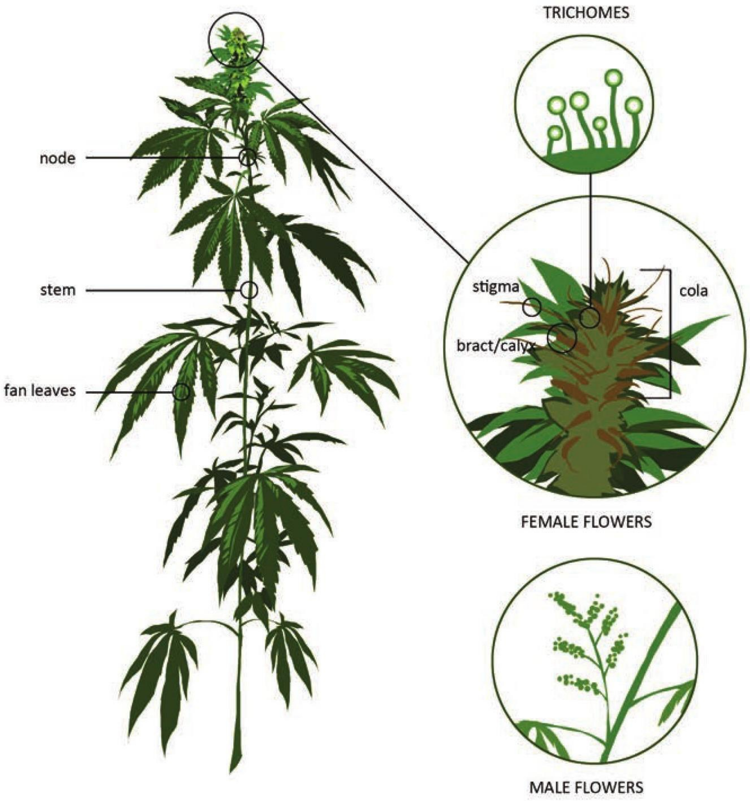
Cannabis Ruderalis Leaf

Many hybrid varieties of cannabis—sometimes referred to as strains—have developed from these three species, both through selective breeding and in the wild. Most cannabis varieties grown today are hybrids that exhibit features of two or more of these principal species. Cannabis varieties consumed for physiological effects generally are hybrids of sativa and indica that produce relatively large and dense flowers. Certain cannabis varieties—known as hemp—that are grown to produce industrial goods generally are sativa-dominant varieties or hybrids of sativa and ruderalis that produce relatively small and sparse flowers.

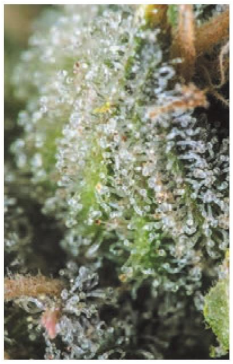
Cannabis yields more than 100 different compounds known as "cannabinoids," which, when consumed, act on cannabinoid receptors in cells in the human nervous and immune systems. The primary cannabinoid in most cannabis is tetrahydrocannabinol, or THC, the psychoactive compound responsible for the "high" or euphoric feeling commonly associated with cannabis consumption. The next most abundant cannabinoid is cannabidiol, or CBD, which produces a physical effect without the psychoactive effects associated with THC.

Cannabis also includes a variety of compounds known as "terpenes," which are understood to interact with cannabinoids to produce some of the physiological effects sought by cannabis consumers. Terpenes are present in cannabis and many other types of plants and are responsible for a plant's aroma and flavor. Examples of terpenes found in cannabis include limonene, which is known for its citrus smell and is also present in citrus fruit rinds, and pinene, which is known for its pine and fir aromas and is also found in pine resin.

The highest concentrations of cannabinoids and terpenes are found in the "trichomes" on the flowers of unpollinated female cannabis plants. Trichomes are crystalline or hairlike components that secrete cannabinoids, terpenes and other compounds; they generally occur all over the cannabis plant but are found in highest concentration on the flower. The following illustration shows the basic anatomy of a cannabis plant, and the images to the right show a female cannabis plant flower and a close-up view of trichomes.



Cannabis Flower



Trichomes

Cannabis Plant Anatomy

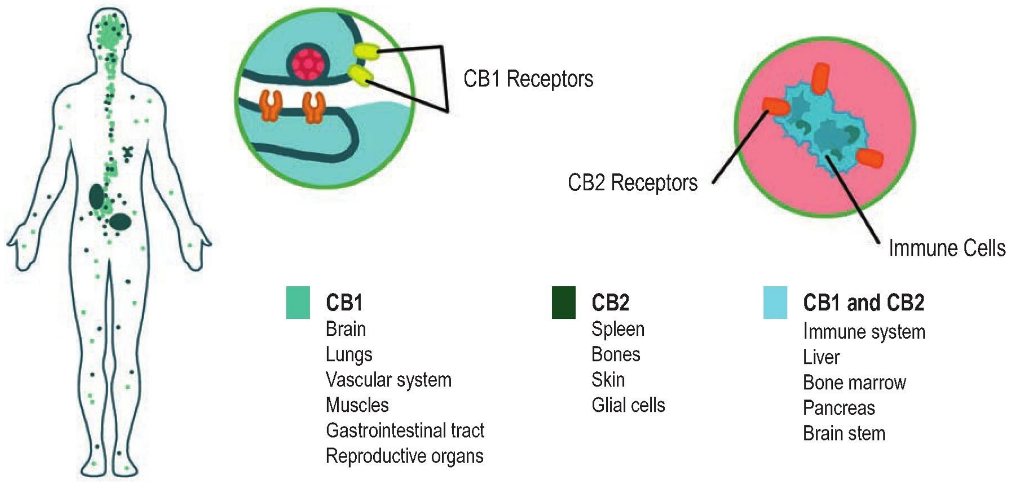
Cannabis can be consumed in a variety of ways that introduce its active compounds into the body: smoking cannabis flower or its extracts, vaporizing cannabis flower or its extracts, ingesting cannabis extracts or food products prepared with cannabis and topical application of cannabis products. Human consumption of cannabinoids and terpenes is widely believed to have numerous medicinal benefits and therapeutic applications. Depending on the types and relative concentrations of the cannabinoids and terpenes consumed, these benefits may include pain relief, reduction of inflammation, and promotion of an energetic, uplifting mood or a calm, relaxed mood.

Although humans have used cannabis therapeutically for thousands of years, only recently have scientists begun to research and understand at the chemical and biological levels how cannabis works with the human body. In the 1940s, the American organic chemist Roger Adams performed numerous studies on cannabis and identified and isolated the cannabinoids THC, CBD and cannabinol, or CBN. In the 1960s, a team of scientists led by Raphael Mechoulam at the Weizmann Institute of Science in Israel more completely determined the chemical composition of THC, CBD and certain other cannabinoids. This research on cannabinoids ultimately led to the discovery that the human body naturally produces its own cannabinoids and uses them to regulate homeostasis (a process by which biological systems tend to maintain internal stability, or balance).

The Human Endocannabinoid System

The human endocannabinoid system consists of nervous and immune system receptors involved in regulating health and physiological functions. There are two types of endocannabinoid receptors, CB1 and CB2 receptors, which are located in the brain and in other organs, tissues and glands throughout the human body. The human body actively regulates variables related to appetite, immune response, memory, mood, pain, sleep and other functions by naturally creating compounds known as "endocannabinoids" and delivering them to these receptors. The following illustration depicts the human endocannabinoid system and the location of CB1 and CB2 receptors.

Human Endocannabinoid System


CB1 Receptors
CB2 Receptors
Immune Cells
🟩 CB1
Brain
Lungs
Vascular system
Muscles
Gastrointestinal tract
Reproductive organs
🟩 CB2
Spleen
Bones
Skin
Glial cells
🟦 CB1 and CB2
Immune system
Liver
Bone marrow
Pancreas
Brain stem

The physiological effects of cannabis consumption are believed to be primarily the result of THC, CBD and other cannabinoids bonding with the body's endocannabinoid receptors and the consequent impact on functions regulated by the endocannabinoid system. As scientists gain a deeper understanding of the human endocannabinoid system, they are beginning to explore the application of cannabinoids to a broad range of medical conditions and ailments. Although medical research on cannabinoids is nascent, cannabis is currently being used to manage many conditions, including anxiety, depression, inflammation, insomnia, nausea, neural disorders and pain.

CB1 and CB2 Receptors

CB1 and CB2 endocannabinoid receptors, which are found on cell surfaces throughout the body, are believed to be more numerous than any other cellular receptor signaling system in the human body. The CB1 receptors are located primarily in the brain, central nervous system and other tissues; these receptors play a modulatory role in memory, mood, sleep, appetite and pain sensation. The CB2 receptors are located primarily in peripheral organs associated with the immune system, with the greatest concentration in the spleen, and are responsible for managing inflammation and autoimmune function. Many tissues contain both CB1 and CB2 receptors, with each receptor type linked to a different physiological function.

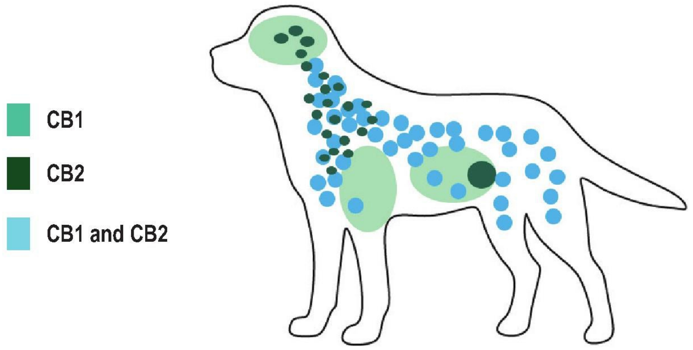
Human Endocannabinoids

Endocannabinoids are the cannabinoids created naturally by the human body for delivery to CB1 and CB2 receptors. In contrast with cannabinoids introduced through cannabis consumption, endocannabinoids are broken down quickly by the body and cause effects with shorter durations. One well-studied endocannabinoid is anandamide (AEA). AEA is associated with the maintenance of mood, and AEA deficiency is understood to be anxiogenic (anxiety-inducing). Maintaining appropriate AEA levels within the human body is believed to reduce pain and inflammation, counter the proliferation of cancer cells, relieve anxiety and promote adult neurogenesis (a process whereby nerve cells are generated from neural stem cells). Like THC, AEA has a small molecular structure that binds to CB1 receptors. AEA is currently being studied for its effects on angiogenesis (the process of developing new blood vessels), anxiety, cancer and memory consolidation. AEA is also present outside the human body; for example, it is a natural component of chocolate.

Endocannabinoid Systems in Animals

Nonhuman mammals, including dogs, cats and horses, have been shown to have endocannabinoid systems that are similar to their human counterparts: these systems employ CB1 and CB2 receptors and function through the natural production of endocannabinoids. This implies that the endocannabinoid system is not a recent evolutionary development, but rather an ancient physiological feature of mammals in general. The cannabinoids found in cannabis, particularly CBD, have been shown to have a range of therapeutic applications for certain animals, including antibacterial and anti-inflammatory properties, appetite and bone-growth stimulation, and pain relief. The following chart depicts the canine endocannabinoid system and CB1 and CB2 receptors.

Canine Endocannabinoid System



Cannabinoids

Cannabinoids are compounds present in the cannabis plant that act on human cannabinoid receptors in cells in the nervous and immune systems. Scientists have identified more than 100 cannabinoids in the cannabis plant. Generally, the most abundant cannabinoid is THC, a psychoactive compound that causes a euphoric "high," and the second most abundant cannabinoid is cannabidiol, or CBD, which produces a relaxing physical effect without a psychoactive effect. Consuming cannabinoids has been shown to have numerous medicinal benefits and therapeutic applications. The following table lists 20 common conditions for which medical cannabis use has been legalized under U.S. state laws and identifies 8 cannabinoids that are used or being studied to treat these conditions. A brief description of these cannabinoids follows the table.

Common Qualifying Medical Conditions and Potentially Therapeutic Cannabinoids

	THC	CBD	CBC	CBG	CBGA	CBN	THCA	CBDA
Alzheimer's disease	●							●
Amyotrophic lateral sclerosis (ALS)	●	●				●		
Anorexia	●							
Arthritis	●	●						
Cachexia	●	●						
Cancer	●	●	●	●			●	●
Chronic pain	●	●	●		●	●	●	
Crohn's disease				●				
Epilepsy		●						
Glaucoma	●	●		●				
Hepatitis C	●	●						
HIV/AIDS	●	●						
Inflammation		●	●	●	●		●	●
Migraine	●	●						
Multiple sclerosis	●							
Nausea	●	●					●	
Nervous system degeneration		●						
Parkinson's disease		●						
Post-traumatic stress disorder (PTSD)		●						●
Spasms	●	●				●	●	

THC **Tetrahydrocannabinol:** THC refers to delta-9-tetrahydrocannabinol and certain chemical variants, including delta-8-tetrahydrocannabinol. THC is the most abundant cannabinoid in cannabis and is understood to be the psychoactive compound in cannabis primarily responsible for the euphoric feeling of being "high." Both recreational and medicinal users often seek the psychoactive effects of THC and may prefer certain cannabis products based solely on the quality and level of THC. THC is believed to have wide-ranging medicinal benefits: analgesic, antianxiety, antibacterial, anticancer, antidepressant, antiemetic, anti-inflammatory, antinausea and antispasmodic. It also is believed to have therapeutic applications, such as appetite stimulation, bronchodilation, neuroprotection and pain relief.

CBD Cannabidiol: CBD is considered to be the second most abundant cannabinoid in cannabis. It is nonpsychoactive and is believed to counteract the psychoactive effects of THC. CBD also is believed to have wide-ranging medicinal benefits: analgesic, antianxiety, antibacterial, anticancer, anticonvulsant, antidepressant, antiemetic, anti-inflammatory, anti-insomnia, anti-ischemic, antipsychotic and antispasmodic. In addition, CBD is believed to have therapeutic applications, including appetite stimulation, bone-growth stimulation, immunosuppression and neuroprotection. CBD can be derived from many cannabis strains, including low-THC strains ordinarily grown to produce industrial hemp products.

CBC Cannabichromene: CBC is thought to be the third most abundant cannabinoid in cannabis and is nonpsychoactive. Like THC and CBD, CBC is believed to have several medicinal benefits, including analgesic, antibacterial, anticancer, antidepressant, antifungal, anti-inflammatory and anti-insomnia. CBC is also used as a therapeutic bone-growth stimulant. Ongoing research seeks to determine the role of CBC in reducing gastrointestinal inflammation. CBC may also have applications in pain management—in addition to binding to the CB1 and CB2 endocannabinoid receptors, it has been shown to interact with certain pain receptors.

CBG Cannabigerol: CBG is nonpsychoactive and is believed to have several medicinal benefits—analgesic, antibacterial, anticancer, antidepressant and antifungal—as well as a therapeutic application for bone-growth stimulation. CBG is present primarily during the early stages of the cannabis plant's growth cycle; only small amounts can be extracted from the plant during its flowering stage (although strains of cannabis have recently been bred to have high levels of CBG). CBG is believed to partially counteract the psychoactive effects of THC and to decrease anxiety and muscle tension.

CBGA Cannabigerolic Acid: CBGA is a nonpsychoactive precursor to all other cannabinoids, including THC, CBD, CBC and CBG. Much of a cannabis plant's CBGA ultimately transforms into other cannabinoids through the chemical process of decarboxylation. CBGA is used for analgesic and anti-inflammatory applications. Certain cannabis strains cultivated to produce industrial hemp products are believed to contain high levels of CBG relative to other strains.

CBN Cannabinol: CBN has been shown to produce some psychoactive effects and is believed to have several medicinal benefits, such as analgesic, antibacterial, anticonvulsive, anti-inflammatory and anti-insomnia. Unlike many other cannabinoids, CBN is not derived directly from CBGA decarboxylation; instead, it results from THC degradation. The CBN level of a cannabis plant is sometimes used as a measure of the plant's overall quality for consumption.

THCA Delta-9-Tetrahydrocannabinolic Acid: THCA is found abundantly in raw cannabis flower and is the precursor to THC. THCA is nonpsychoactive and is believed to have several medicinal benefits, including anticancer, anti-inflammatory and antispasmodic. THCA decarboxylates into THC through drying or application of intense heat, such as the heat applied during smoking or vaporizing the cannabis plant.

CBDA **Cannabidiolic Acid:** CBDA, the precursor to CBD, is nonpsychoactive and is believed to have several medicinal benefits—anticancer, antiemetic and anti-inflammatory—as well as therapeutic applications. Generally, CBDA is present in the cannabis plant in low levels, although recently some strains have been grown with CBDA levels comparable to typical THC levels. Like THCA, CBDA decarboxylates into other compounds when heated. (An explanation of decarboxylation follows.)

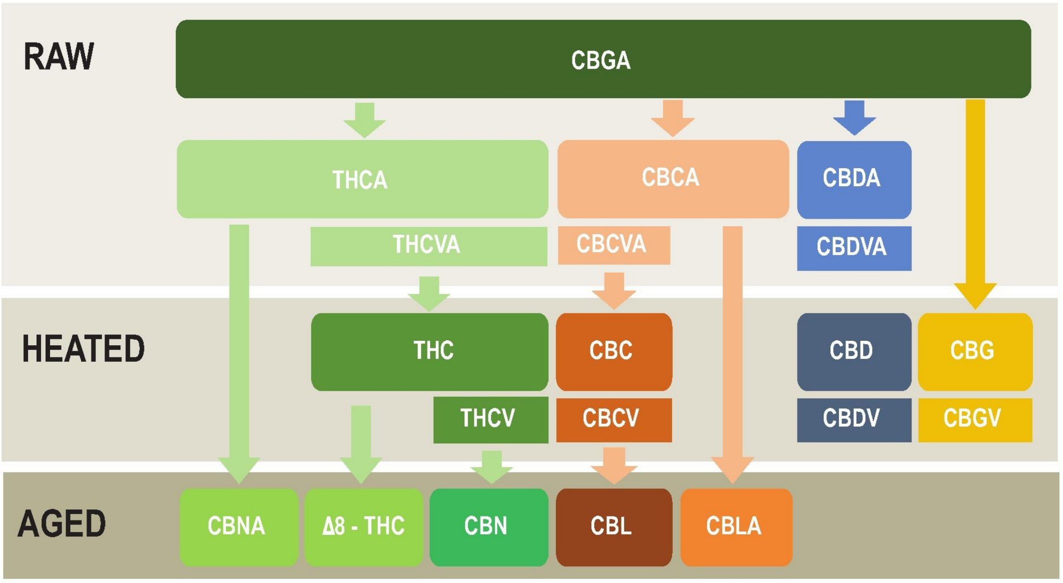
Cannabinoid Composition Levels

As a general rule, THC and CBD are the most prevalent cannabinoids found in many strains of the cannabis plant, with other cannabinoids appearing in relatively minuscule amounts. (One exception to this rule is the low-THC strains grown to produce industrial hemp.) THC-dominant strains historically have been the most popular with cannabis consumers, but CBD-dominant strains and strains with high levels of other cannabinoids are believed to have medicinal benefits and hold promise for therapeutic applications.

Cannabinoid Creation: Decarboxylation

All cannabinoids present in cannabis begin as cannabigerolic acid, or CBGA. CBGA is ultimately transformed into various other cannabinoids through decarboxylation, a process by which a compound's chemical structure changes due to light, heat, alkaline conditions or other chemical forces. The two main catalysts for decarboxylation of CBGA and other cannabinoids are heat and time (the aging process). The following chart depicts the process of cannabinoid decarboxylation.

Cannabinoid Decarboxylation Process



Source: Elemental Wellness

As examples of the decarboxylation process, consider the changes to THCA that result from heat and aging. If the nonpsychoactive THCA naturally present in raw cannabis is heated, it quickly decarboxylates into psychoactive THC; this is what commonly occurs when cannabis flower is smoked or vaporized for its psychoactive effect. THCA may also be stored and aged to produce CBN.

Cannabinoid Boiling Points

Cannabinoids boil at temperatures lower than the temperature at which cannabis flower burns. Based on this property, vaporizers have been developed to heat cannabis flower to a point at which its active compounds boil and can be inhaled as vapor but at which point the flower does not combust and create smoke. The approximate temperatures at which select cannabinoids boil and cannabis flower combusts are shown in the following table.

Compound Boiling and Flower Combustion Temperatures

Compound/Flower	Temperature (°F)
THCA	220
CBDA	250
THC	315
CBD	355
CBN	365
Flower	450

Smoking cannabis flower remains the most popular form of cannabis consumption, even though it is believed to destroy as much as 30% of the active cannabinoids and is less efficient than merely heating the desired compounds to their boiling points. Vaporizers are becoming increasingly sophisticated, and those that can maintain temperatures which target the activation of specific cannabinoids are becoming popular.

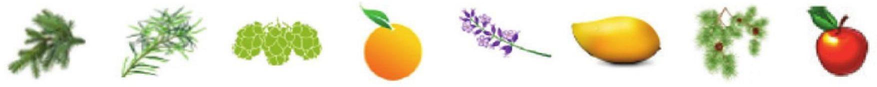
■ Terpenes

Terpenes are a class of organic compounds present in cannabis and many other plants; they are responsible for a plant's aroma and flavor. The strong odors produced by terpenes are believed to be part of the natural defense of many plants. Cannabis contains more than 100 different terpenes, which are believed to interact with cannabinoids in a way that contributes to the medicinal benefits and therapeutic applications of cannabis. Like cannabinoids, terpenes are present in highest concentration in the flowers of cannabis plants. (Terpenoids are certain chemical variants of terpenes, and this report uses the general term "terpene" to refer to both terpenes and terpenoids.)

Terpenes are believed to interact in various ways with the human physiology: by acting on receptors and neurotransmitters, combining or dissolving with fats, inhibiting serotonin uptake and increasing dopamine activity in the brain. Scientists have yet to develop an extensive and detailed understanding of the mechanisms and effects of many terpenes. However, consumption of certain cannabis strains with particular terpene profiles and corresponding aromas are generally associated with certain experiences. For example, cannabis strains that smell of musk or clove (indicating the presence of myrcene) tend to cause sedative and relaxing effects, strains with a piney scent (indicating the presence of pinene) are used to promote focus and memory retention, and strains with a lemony scent (indicating the presence of limonene) are consumed for mood uplift.

The following table identifies eight terpenes found in cannabis and lists the medicinal benefits and therapeutic applications commonly associated with each.

Potential Medicinal Benefits and Therapeutic Applications of Notable Terpenes



	Camphene	Caryophyllene	Humulene	Limonene	Linalool	Myrcene	Pinene	Terpinolene
Antianxiety				●	●			
Antibacterial	●	●	●	●	●	●	●	●
Anticancer		●		●		●	●	
Anticonvulsive				●	●			
Antidepressant				●	●			
Antifungal	●	●		●	●	●	●	●
Anti-inflammatory	●		●			●	●	
Anti-insomnia					●			●
Anti-ischemic		●						
Antiseptic						●		●
Antitumor			●					
Appetite suppressant			●					
Bronchodilator	●	●					●	

Camphene: Camphene smells strongly of damp woodlands and fir needles and is believed to have several medicinal benefits, such as antibacterial, antifungal and anti-inflammatory, and a therapeutic application as a bronchodilator. Some studies have shown that camphene could be used to combat heart disease as an alternative to other pharmaceutically based therapies with harsh side effects. Camphene is a minor component of many essential oils and is used as a food additive.

Caryophyllene: Caryophyllene is known for its peppery, woody and spicy smell. It is believed to have several medicinal benefits, such as antibacterial, anticancer, antifungal and anti-ischemic, and a therapeutic application as a bronchodilator. Caryophyllene is found in many plants, including Thai basil, cloves, cinnamon leaves and black pepper.

Humulene: Humulene is well known for giving beer its hoppy aroma and is believed to have several medicinal benefits: antibacterial, anti-inflammatory and antitumor. Humulene is used to aid weight loss by acting as an anorectic (appetite suppressant). It is also found in hops and coriander.

Limonene: Limonene is recognized for its citrusy smell. Its medicinal benefits are believed to include antianxiety, antibacterial, anticancer, anticonvulsive, antidepressant and antifungal. Limonene present in cannabis quickly enters the bloodstream upon inhalation, which may facilitate the quick absorption of other terpenes and thus contribute to an uplifting experience. Limonene is also present in citrus fruit rinds, rosemary, juniper, peppermint and pine needle oils, and its strong smell serves as a natural insect repellent.

Linalool: Linalool has floral and lavender aromas. It is believed to have medicinal benefits that include antibacterial, antidepressant, antifungal and anti-insomnia. Linalool may also counteract anxiety induced by THC consumption. Some research suggests that linalool may boost the immune system, reduce lung inflammation and restore cognitive and emotional function (potentially making it useful in the treatment of Alzheimer's disease). Linalool is found naturally in hundreds of plants and is a common ingredient in bath products.

Myrcene: Myrcene is generally the most abundant terpene found in cannabis and is known for its musky and earthy herbal smell, comparable to the smell of cloves. Myrcene is believed to have several medicinal benefits, including antibacterial, anticancer, antifungal, anti-inflammatory and antiseptic. Myrcene is understood to enable and hasten the psychoactive effect of THC by lowering resistance posed by the blood-brain barrier and increasing the THC saturation capacity of the CB1 receptors. Consuming cannabis with high levels of myrcene may contribute to sedative and relaxing effects suitable for the treatment of insomnia and pain. Myrcene is present in hops, citrus fruits, bay leaves, eucalyptus, wild thyme, lemongrass and many other plants.

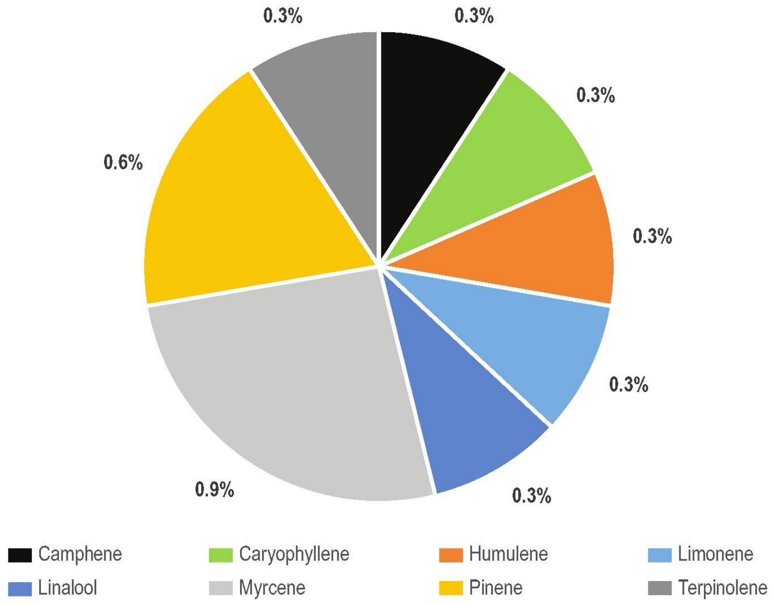
Pinene: Pinene is known for its pine and fir aromas and is believed to have medicinal benefits, such as antibacterial, antifungal and anti-inflammatory, and a therapeutic application as a bronchodilator. Pinene has shown potential to function as an anticancer agent and is believed to counter some of the psychoactive effects of THC. Pinene is present in conifers, pine resin and citrus fruits and is one of the terpenes most prevalent in nature.

Terpinolene: Terpinolene has a piney aroma and subtle herbal and sweet floral scents similar to citrus fruits. Terpinolene is believed to have medicinal benefits, including antibacterial, antifungal, anti-insomnia and antiseptic. It is also thought to be a central nervous system depressant and is used to induce sleep or reduce psychological distress. Terpinolene is found in sage and rosemary and is used in soaps and perfumes.

Cannabis Plant Terpene Profile

Myrcene is the most abundant terpene found in many cannabis strains, and other terpenes are generally present in lesser, varying amounts. The following chart shows the terpene levels (percentage by weight) found in the flower of a typical strain of cannabis.

Typical Cannabis Flower Terpene Levels (Percentage by Weight)

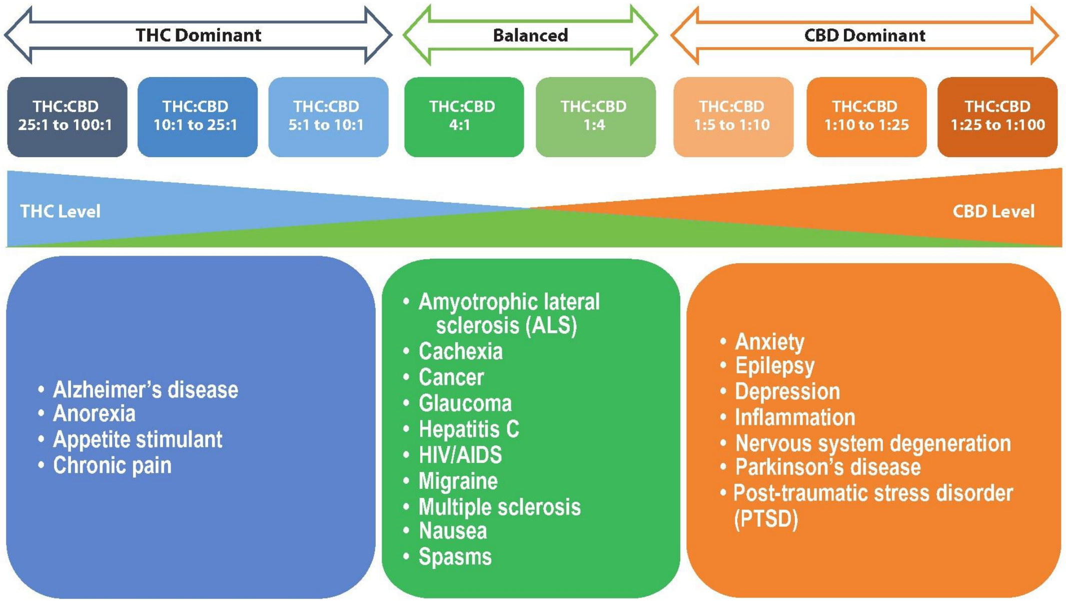


Cannabis Formulations

The "Entourage Effect"

The cannabis industry is currently focused on identifying and producing customized formulations of cannabinoids and terpenes that may effectively target specific health conditions or otherwise cause an intended, desirable effect on users. Cannabis strains with specific THC to CBD ratios are currently the predominant focus for therapeutic applications. THC to CBD ratios in strains popular for treating certain medical conditions generally range from 100:1 through 1:100, as illustrated by the following chart.

THC and CBD Formulation Spectrum


THC Dominant
Balanced
CBD Dominant
THC:CBD 25:1 to 100:1
THC:CBD 10:1 to 25:1
THC:CBD 5:1 to 10:1
THC:CBD 4:1
THC:CBD 1:4
THC:CBD 1:5 to 1:10
THC:CBD 1:10 to 1:25
THC:CBD 1:25 to 1:100
THC Level
CBD Level
• Alzheimer's disease
• Anorexia
• Appetite stimulant
• Chronic pain
• Amyotrophic lateral sclerosis (ALS)
• Cachexia
• Cancer
• Glaucoma
• Hepatitis C
• HIV/AIDS
• Migraine
• Multiple sclerosis
• Nausea
• Spasms
• Anxiety
• Epilepsy
• Depression
• Inflammation
• Nervous system degeneration
• Parkinson's disease
• Post-traumatic stress disorder (PTSD)

The "entourage effect" refers to the overall user experience produced by the interactions among all active compounds in the cannabis plant. The various cannabinoids and terpenes in a particular cannabis plant are believed to work synergistically with each other and with the human endocannabinoid system to create an effect very different from the effect any one compound would create. This phenomenon may partially explain why different cannabis strains are used to treat diverse medical conditions.

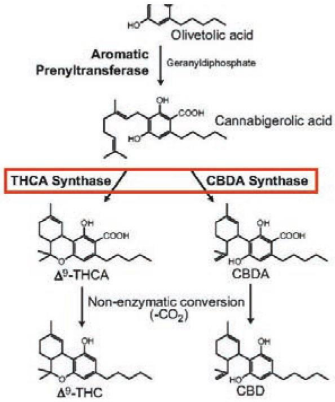
There are several generally accepted examples of the entourage effect. CBD is believed to regulate the psychoactive effects of THC and reduce short-term memory loss, sleepiness and paranoia that may be caused by THC. Myrcene is understood to enable and hasten the psychoactive effect of THC by lowering resistance posed by the blood-brain barrier and increasing the THC saturation capacity of the CB1 receptors. Other terpenes have been shown to block endocannabinoid receptors in the brain while promoting bonding by endocannabinoid receptors located elsewhere in the body.

Many cannabinoid and terpene formulations developed for therapeutic applications are created by combining extracts from multiple cannabis strains, a process known as "Frankensteining." Some believe Frankenstein formulations are less effective than formulations developed from a single strain because the natural balance of compounds in a single strain translates to a naturally balanced effect on the human body.

An understanding of entourage effects and how to effectively combine cannabinoids and terpenes is believed to be critical to the development of targeted cannabis therapies. Examples of cannabis-based therapies being developed with specific cannabinoid-terpene profiles include acne medication containing CBD and limonene, linalool and pinene; antiseptic agents containing CBG and pinene; treatments for social anxiety disorders containing CBD, limonene and linalool; and sleeping medicines combining CBD, THC, caryophyllene, linalool and myrcene.

Genetics and Propagation

Selective breeding and other botanical techniques are being used to develop cannabis varieties with desired profiles of compounds, and scientists are developing tools to synthesize isolated cannabinoids in laboratory settings in order to study cannabis at the genetic level. For example, the first mapping of a cannabis genome was completed in 2011 by a team of Canadian botanists, led by Jon Page from the National Research Council Canada and Timothy Hughes from the University of Toronto, who sequenced 30,000 genes in a sativa variety named “Purple Kush.”


HO
Olivetolic acid
Aromatic Prenyltransferase
Geranyldiphosphate
OH
COOH
HO
Cannabigerolic acid
THCA Synthase
CBDA Synthase
OH
COOH
Δ9-THCA
OH
COOH
HO
CBDA
Non-enzymatic conversion
(-CO2)
OH
Δ9-THC
OH
HO
CBD

Cannabis Genome

Genetic copies, or “clones,” of cannabis plants are generally produced using two methods, “clone clipping” and micropropagation, or “tissue culture.” Clone clipping involves cutting a growing tip from a cannabis plant that is several inches long and inserting the cut tip into a growing medium, where it then grows into a new plant. Tissue culture involves taking a small tissue sample (which may even be a single cell) from a plant and growing it temporarily in a sterile nutrient solution before transferring it to a permanent growing medium. Controlling cannabis plant genomes is expected to be an important intellectual property issue in the cannabis industry (at least one U.S. patent has been issued for a strain of cannabis).

Cannabis Plant Tissue Cultures

Synthetic cannabinoids and terpenes can be manufactured by modifying plant-based compounds or through tools of synthetic biology and biocatalysis. For example, a synthetic version of THC known as dronabinol is the active compound in the pharmaceutical product Marinol, which was approved by the FDA in 1985 for use in treatment of nausea and vomiting associated with cancer chemotherapy. Methods for biosynthetic production of cannabinoids have been patented in the United States. Some medical practitioners and cannabis users have found synthetic compounds to be less effective than plant-based cannabinoids and have attributed this reduced efficacy to the lack of an entourage effect.

Dosage, Safety and Side Effects

Cannabis dosing schedules provided by doctors and producers generally lack scientific rigor and, although industry participants strive to create a reliable dosing framework, users generally determine dosage through self-titration and trial and error. (This method of dosing does not always lead to the desired effect, but it is generally agreed that there is a low risk of death from an overdose of cannabis.)

Product packaging commonly indicates that a 10-mg serving of cannabinoids represents one dose, and servings of 2 mg to 5 mg are commonly characterized as "microdoses." Examples of representative dosage amounts used to treat some common medical conditions are presented in the following table.

Representative Dosage Amounts

Desired Effect or Ailment	Dosage	Dosage Ratio (THC:CBD)
"High"	10 mg THC	10:1 to 100:1
Anxiety, depression, spasms	25 mg CBD	1:10
Cancer	25 mg CBD	1:1
Chronic pain	2.5–20 mg THC	10:1
Epileptic seizures	200–300 mg CBD	1:5
Glaucoma	20–40 mg CBD	1:2 to 1:4
Increased appetite	2.5 mg THC	5:1
Multiple sclerosis	2.5–120 mg THC	1:1
Schizophrenia	40–1,280 mg CBD	1:4 to 1:128
Sleep disorders	40–160 mg CBD	1:4 to 1:16

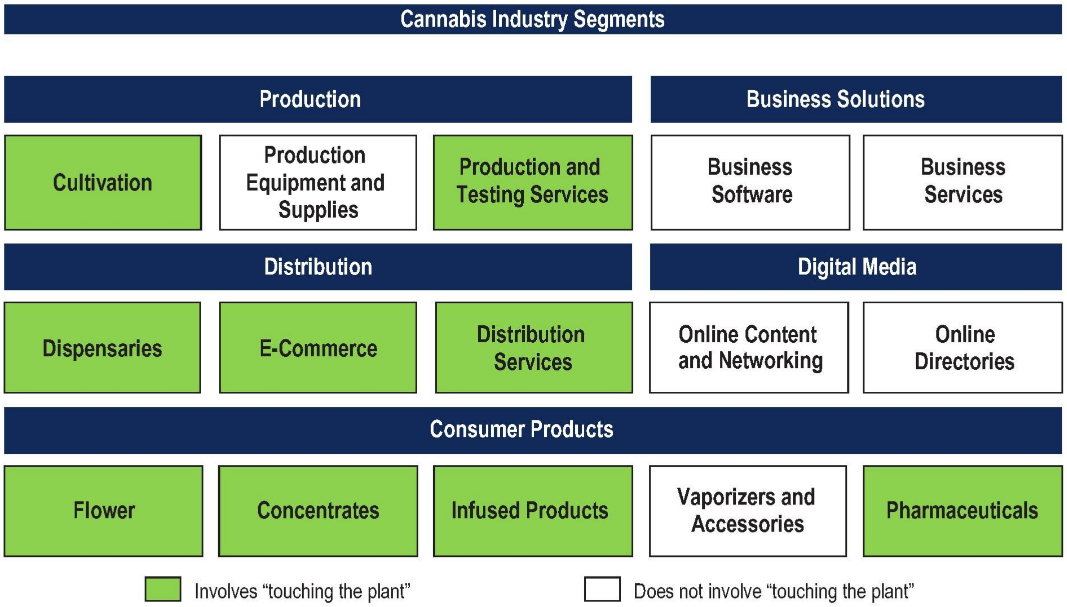
Neither the potential medicinal benefits and therapeutic applications of cannabis consumption nor the negative side effects of cannabis use have been thoroughly researched by medical science. Short-term negative side effects are believed by some to include sensory distortion, panic, anxiety, poor coordination of movement, reduced reaction time, lethargy or drowsiness, depression and elevated heart rate. Longer-term effects may include suppression of the immune system, growth disorders, destruction of lung fibers, brain lesions, reduced sexual capacity, difficulties with concentration, reduced ability to learn and retain information, and personality and mood changes. There is also an ongoing debate about whether cannabis consumption may lead to the abuse of more harmful substances (the so-called "gateway drug" debate).

CHAPTER III

Cannabis Industry Segmentation

The nascent cannabis industry is often viewed by investors and others as a single, homogeneous industry, in much the same way the "technology" industry was viewed in the early 1990s. As the technology industry became more important to the global economy and was better understood by the investment community, however, investment banks and other industry analysts tracked an increasing number of discrete yet related industry segments. In the cannabis industry we are seeing a similar trend, which we expect to continue as the industry evolves.

To help investors better evaluate investment opportunities in the cannabis industry, we currently define five primary segments: production, distribution, consumer products, business solutions and digital media. We further divide each segment into multiple subsegments. Each segment has unique opportunities and risks. For example, companies that possess, manufacture or distribute cannabis (commonly known as "touching the plant") face risks related to violating federal law—and state-law compliance obligations—not generally faced by providers of business software or digital media content. Many businesses operate in multiple segments, and we expect industry leaders to emerge in each segment. The five primary segments and their subsegments are illustrated in the following chart.



Cannabis Industry Segments

Production
- 🟩 Cultivation
- ☐ Production Equipment and Supplies
- 🟩 Production and Testing Services

Business Solutions
- ☐ Business Software
- ☐ Business Services

Distribution
- 🟩 Dispensaries
- 🟩 E-Commerce
- 🟩 Distribution Services

Digital Media
- ☐ Online Content and Networking
- ☐ Online Directories

Consumer Products
- 🟩 Flower
- 🟩 Concentrates
- 🟩 Infused Products
- ☐ Vaporizers and Accessories
- 🟩 Pharmaceuticals

🟩 Involves “touching the plant”
☐ Does not involve “touching the plant”

Production

We divide the production segment of the cannabis industry into three subsegments: cultivation, production equipment and supplies, and production and testing services. Cultivation involves operating grow facilities, propagating cannabis strains, and harvesting and curing cannabis flower. Production equipment and supplies include the physical components used in production, such as extraction equipment, testing equipment, lighting, irrigation systems and plant nutrients. Production and testing services include services that support production, such as extraction or packaging, as well as testing services related to product safety, composition and quality control. Each of these production subsegments is described in more detail in the following discussion.

Cultivation

The principal function of a cannabis cultivator is to produce cannabis plants and flowers with the aromas, flavors, active compounds and overall quality demanded by consumers and production intermediaries. A cultivator can access hundreds of existing cannabis strains by purchasing seeds or clones from commercial seed banks or nurseries, or developing unique strains through selective breeding. A cultivator seeks to optimize the quality and quantity of a plant’s yield by managing cultivation input variables such as light, air, nutrition, and drying and curing times.

Cannabis Cultivation Process

Ordinarily, a period of three to ten months is required to grow and prepare cannabis flower for consumption. The cultivation process generally can be organized into six phases: seed selection, seedling, vegetative, flowering, harvesting and curing. Each of these phases is summarized in the following table.

Cultivation Process Overview: Seed to Bud

Time

Seed Selection

Start

Selecting a seed is the first step of the cultivation process. A cultivator can choose from more than 1,500 unique seed varieties, each of which has the capacity to produce a cannabis strain with a particular cannabinoid and terpene profile and other unique characteristics.

Seedling

1–4 Weeks

The seedling stage is the period during which the seed sprouts and the plant stem starts to grow. During this stage, cultivators manage growth to avoid long stems that may lack the strength to support further vegetation.

Vegetative

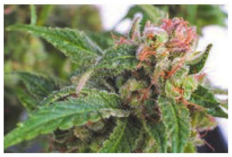
3–8 Weeks

The vegetative stage is characterized by the plant's rapid growth and revelation of sexual characteristics. During this stage, cultivators remove male plants and control growth inputs, such as light and nutrients, to maximize the plant's yield of unpollinated female flower (which generally contains the highest concentration of active compounds).

Flowering

6–16 Weeks

The flowering phase comprises the growth and maturation of the cannabis flower and the trichomes on the flower. Trichomes are hairlike components that secrete cannabinoids, terpenes and other compounds. Trichomes generally occur all over the surface of the plant, but are found in highest concentration on the flowers of unpollinated female plants.



Harvesting

2–4 Weeks

Harvesting involves clipping the leafstalks (on which the flowers grow) from the main plant stem, drying the leafstalks and flowers, and trimming the dried flowers. Cultivators harvest at a time calculated to maximize flower yield and optimize cannabinoid and terpene content.

Curing

2–8 Weeks

The curing phase is a period of controlled fermentation of the dry cannabis flower. The conditions under which fermentation occurs, as well as the duration of the fermentation process, further affect the cannabis flower's aroma, taste and cannabinoid composition.

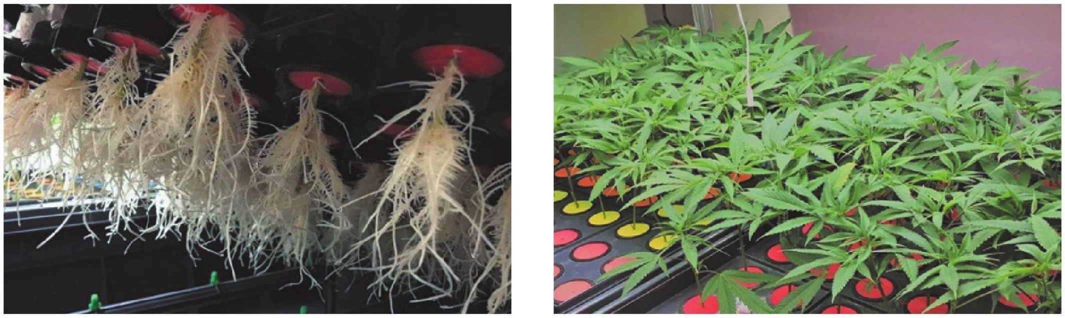
3–10 Months

Cultivation Facilities

There are three general types of cannabis cultivation facilities: outdoor facilities, where cannabis is grown under natural sunlight and widely exposed to the elements; greenhouse facilities, where cannabis is grown under filtered sunlight and environmental conditions are partially controlled; and indoor facilities, where cannabis is grown under electrical lighting and environmental conditions are tightly controlled. Some facilities combine features of these general types. For example, some greenhouses rely primarily on filtered sunlight but also employ supplementary electrical lighting to influence the plant flowering cycle. Each type of facility is suitable for certain purposes.

Growing indoors under electrical lighting is the most expensive way to grow cannabis, but typically yields the highest quality cannabis by providing for maximum control over variables such as light, air, nutrition, and exposure to contaminants and pests. Electrical lighting products for indoor cultivation include traditional and compact fluorescent lamps, high-intensity discharge (HID) lamps and light-emitting diode (LED) lamps. Adequate carbon dioxide levels can be maintained indoors with either bottled CO_2 or CO_2 generators. Common indoor growth mediums include soil, hydroponic systems (wherein nutrients are added to sand, gravel or liquid growth medium) and aeroponic systems (wherein roots hang suspended in a nutritional aerosol solution). Indoor cultivation facilities are prevalent in Canada and certain parts of the United States where climatic conditions are not favorable to outdoor cannabis cultivation.

Indoor Grow Rooms



Aeroponic Systems

Compared to indoor cultivation facilities that use electrical lighting, greenhouse and outdoor facilities are generally less expensive to operate and more appropriate for large-scale projects, but provide less control over growing conditions. The use of natural sunlight provides substantial savings on lighting equipment and energy costs, but may limit the number of grow cycles per year. Outdoor and greenhouse environments are more exposed to environmental risks that may negatively affect crops, such as pests, contaminants and adverse weather. Outdoor and greenhouse cultivation facilities are prevalent in Oregon, California and certain Latin American countries, which have climates conducive to outdoor growing.

Outdoor Greenhouses

The Business of Cannabis Cultivation

Cultivation businesses must navigate a host of operational challenges, including state and local licensing requirements, facility design and construction, research and acquisition of cannabis strains, intellectual property protection, cultivation process engineering, supply-chain management, yield optimization, facility management and security. Many cultivation businesses retain outside consultants to advise on one or more of these issues, although some businesses manage their entire cultivation operations internally. A cultivator may wholesale cannabis flower and other plant material to cannabis concentrate manufacturers or retail dispensaries, or it may be part of a vertically integrated production and retail business that sells its flower and other internally manufactured products through its own dispensaries.

Certain U.S. laws, foreign laws and international treaties currently restrict interstate and some international movement of cannabis products. A cultivation business that wishes to scale its operations into a new jurisdiction often must invest significant capital in a new cultivation facility located within the new jurisdiction. As laws change to allow more interstate and international transportation of cannabis products, cultivators who are operating redundant facilities or expensive indoor facilities will face increased margin pressure. As the cannabis industry matures and becomes more commoditized, we expect the most successful cultivators will be those with strong consumer brands or scalable low-cost operations in regions where the climate is conducive to agricultural production.

Production Equipment and Supplies

Production equipment and supplies include the physical components used in cannabis production. Many industry participants in this subsegment provide products to a broad range of fully legal industries and do not "touch the plant"; therefore, these participants typically do not require special cannabis-related licenses and generally avoid legal risks related to violations of federal law.

Some components of cannabis production are similar or identical to components used in other agricultural industries (such as irrigation systems), and some are specialized for application to the cannabis industry (such as extraction machines). Components supplied for many indoor and greenhouse cultivation facilities include electrical lighting equipment, air filtration and circulation systems, irrigation systems, nutrient management systems, drying and curing equipment, and computer-controlled automation and monitoring systems. Specialty cannabis equipment companies now provide "all-in-one" automated indoor cultivation systems that can be used for in-home cultivation or scaled for commercial purposes.

Extraction System

Cultivation System

Production and Testing Services

Production services include cannabis extraction and product manufacturing services provided primarily on a business-to-business basis to cultivators, consumer product companies and retail dispensaries. Extraction companies invest in specialized equipment that transforms cannabis flower into concentrates intended for wholesale. Product manufacturing services companies process cannabis flower or concentrates, or provide packaging and wholesale services.

Testing services include scientific testing of cannabis products and reporting of information about product quality, safety and composition. Cannabis products are tested at multiple stages of production for genetic information and strain verification, cannabinoid and terpene composition and potency, moisture content and the presence of contaminants, such as residual solvents, heavy metals, mycotoxins, microorganisms and pesticides. Testing, labeling and certification requirements vary widely across jurisdictions, but increasingly are being required by state law and demanded by supply-chain intermediaries and consumers. Uniform standards for testing and reporting are expected to emerge as scientific understanding of cannabis increases and as industry consensus about cannabis-related health and safety concerns develops.

Providers of extraction, manufacturing and testing services generally must obtain state and local cannabis licenses and are exposed to risks related to federal legal violations.

Composition and Potency

Laboratories ordinarily test cannabis for the specific amounts of 10 to 15 cannabinoids and more than 30 terpenes. Cultivators and production intermediaries rely on these test results to identify and track cannabis varieties and to monitor the quality and consistency of production methods. Retailers and consumers use test results information to assist in purchasing decisions. Almost all consumer products now include labeling that, at a minimum, indicates the amounts of THC and CBD.

Pesticides

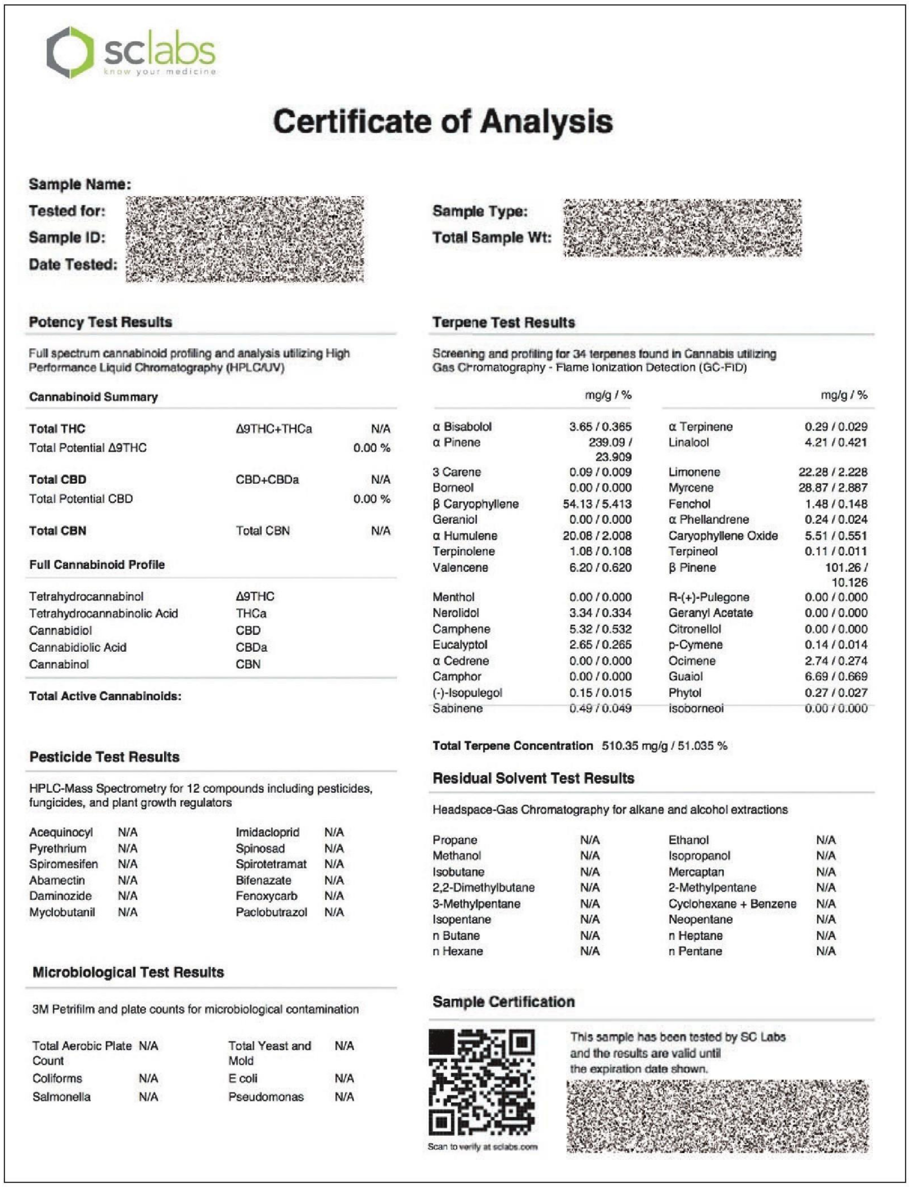
Controlling and disclosing the presence of pesticides in cannabis products is increasingly becoming a focus of regulators and producers. Even cannabis grown under organic conditions can be exposed to pesticides inadvertently, so many states now require all cannabis products to be tested by a state-licensed laboratory for pesticides. Pesticides can be especially problematic in cannabis concentrates; studies have shown extraction processes may concentrate pesticides at a rate higher than cannabinoids and terpenes.

Microbiological Organisms

Certain molds, other fungi and bacteria found in and on the cannabis plant can damage the plant or certain cannabis products and can be harmful if consumed by humans. Mold is a problem most commonly found in indoor growing environments and during the cannabis drying and curing process. Organisms found in cannabis and identified by testing includes aspergillus, salmonella, pseudomonas and *E.coli*.

Residual Solvents

Most extraction processes use solvents to extract the active compounds from cannabis plant material. Commonly used solvents include butane, carbon dioxide, ethanol or propane. Residual solvents are those trace amounts of solvents that remain in a cannabis concentrate after the extraction process. Some residual solvents can be harmful if consumed by humans in sufficient amounts, and others should not be consumed in any amount.



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Certificate of Analysis

Sample Name:
Tested for:
Sample ID:
Date Tested:
[redacted]

Sample Type:
Total Sample Wt:
[redacted]

Potency Test Results

Full spectrum cannabinoid profiling and analysis utilizing High Performance Liquid Chromatography (HPLC/UV)

Cannabinoid Summary

Total THC	Δ9THC+THCa	N/A
Total Potential Δ9THC		0.00 %
Total CBD	CBD+CBDa	N/A
Total Potential CBD		0.00 %
Total CBN	Total CBN	N/A

Full Cannabinoid Profile

Tetrahydrocannabinol	Δ9THC
Tetrahydrocannabinolic Acid	THCa
Cannabidiol	CBD
Cannabidiolic Acid	CBDa
Cannabinol	CBN

Total Active Cannabinoids:

Pesticide Test Results

HPLC-Mass Spectrometry for 12 compounds including pesticides, fungicides, and plant growth regulators

Acequinocyl	N/A	Imidacloprid	N/A
Pyrethrium	N/A	Spinosad	N/A
Spiromesifen	N/A	Spirotetramat	N/A
Abamectin	N/A	Bifenazate	N/A
Daminozide	N/A	Fenoxycarb	N/A
Myclobutanil	N/A	Paclobutrazol	N/A

Microbiological Test Results

3M Petrifilm and plate counts for microbiological contamination

Total Aerobic Plate Count	N/A	Total Yeast and Mold	N/A
Coliforms	N/A	E coli	N/A
Salmonella	N/A	Pseudomonas	N/A

Terpene Test Results

Screening and profiling for 34 terpenes found in Cannabis utilizing Gas Chromatography - Flame Ionization Detection (GC-FID)

	mg/g / %		mg/g / %
α Bisabolol	3.65 / 0.365	α Terpinene	0.29 / 0.029
α Pinene	239.09 / 23.909	Linalool	4.21 / 0.421
3 Carene	0.09 / 0.009	Limonene	22.28 / 2.228
Borneol	0.00 / 0.000	Myrcene	28.87 / 2.887
β Caryophyllene	54.13 / 5.413	Fenchol	1.48 / 0.148
Geraniol	0.00 / 0.000	α Phellandrene	0.24 / 0.024
α Humulene	20.08 / 2.008	Caryophyllene Oxide	5.51 / 0.551
Terpinolene	1.08 / 0.108	Terpineol	0.11 / 0.011
Valencene	6.20 / 0.620	β Pinene	101.26 / 10.126
Menthol	0.00 / 0.000	R-(+)-Pulegone	0.00 / 0.000
Nerolidol	3.34 / 0.334	Geranyl Acetate	0.00 / 0.000
Camphene	5.32 / 0.532	Citronellol	0.00 / 0.000
Eucalyptol	2.65 / 0.265	p-Cymene	0.14 / 0.014
α Cedrene	0.00 / 0.000	Ocimene	2.74 / 0.274
Camphor	0.00 / 0.000	Guaiol	6.69 / 0.669
(-)-Isopulegol	0.15 / 0.015	Phytol	0.27 / 0.027
Sabinene	0.49 / 0.049	isoborneol	0.00 / 0.000

Total Terpene Concentration 510.35 mg/g / 51.035 %

Residual Solvent Test Results

Headspace-Gas Chromatography for alkane and alcohol extractions

Propane	N/A	Ethanol	N/A
Methanol	N/A	Isopropanol	N/A
Isobutane	N/A	Mercaptan	N/A
2,2-Dimethylbutane	N/A	2-Methylpentane	N/A
3-Methylpentane	N/A	Cyclohexane + Benzene	N/A
Isopentane	N/A	Neopentane	N/A
n Butane	N/A	n Heptane	N/A
n Hexane	N/A	n Pentane	N/A

Sample Certification

This sample has been tested by SC Labs and the results are valid until the expiration date shown.

[redacted]

Scan to verify at sclabs.com

Sample Laboratory Test Results

Production Opportunities

We believe opportunities in this segment include:

Specialized Production Services. Production services companies that invest in the necessary equipment and facilities should see strong demand for high-margin specialized services from cultivators and other production intermediaries. We expect opportunities will expand for companies that provide extraction services (particularly those who professionally manage hazardous processes such as hydrocarbon extraction) or develop proprietary infused-product manufacturing processes.

Energy-efficient, Integrated Cultivation Components. We anticipate continued design and construction of sophisticated indoor cultivation facilities, which should present a significant opportunity for suppliers of advanced cultivation components that improve yield and reduce energy costs. We believe companies that provide all-in-one integrated systems for automation, monitoring and control of the production process are more likely to succeed than companies that merely offer a single-point solution.

Branded Laboratory Test Certification. Given the importance of product testing, we believe that leading providers of high-quality testing services have an opportunity to establish an industry recognized "certification," and that such a certification may become a key factor in influencing consumer confidence and demand.

Efficiencies in Cannabis Cultivation. We believe that certain segments of the market will become increasingly commoditized and that cultivators with low production costs and high yields will have significant competitive advantage. Cultivators with operations in regions conducive to low-cost natural production should benefit as laws are changed to facilitate interstate and international cannabis commerce.

Production Challenges

Challenges in this segment include:

Scaling Cultivation Operations. Current laws typically force cultivators to build, and obtain licenses for, potentially redundant, capital-intensive cultivation facilities in each jurisdiction they serve. The capital requirements and uncertainty around licensing present serious challenges to cultivators seeking to scale their operations.

Downward-pricing Pressure on Cannabis Flower. Cannabis wholesale prices are declining as large-scale cultivators begin to commoditize cannabis flower. Small and inefficient cultivators (including high-cost indoor producers) may struggle to produce cannabis at effective margins as cannabis cultivation migrates to global regions with conditions that support low-cost, sustainable production.

Lack of Standardized Testing. Currently, it may be difficult or impossible to reliably compare test results between providers of testing services because the cannabis industry has not yet developed uniform testing standards. Until the industry adopts uniform standards that address testing procedures and reporting for a broad variety of flower, concentrates and infused products, providers of testing services may struggle to develop an industry-wide brand and reputation for quality.

Access to Capital. Participants in this segment generally engage in capital-intensive operations. In particular, cultivation, contract manufacturing and testing facilities require significant capital investment. Emerging companies in this segment may struggle to raise sufficient capital to compete effectively.

Production Outlook

Due to U.S. federal and international legal restrictions on cannabis commerce, producers currently must invest significant capital in potentially redundant facilities located in separate jurisdictions, and many large agricultural producers and equipment suppliers that could effectively compete in the cannabis industry are reluctant to enter the market. In the near term, we expect that cultivators will continue to raise capital for facilities across multiple jurisdictions, and well-managed and well-financed cultivators will differentiate themselves by creating consistent, high-quality strains, developing strong distribution relationships, vertically integrating other supply-chain functions and offering branded products and competitive pricing. We also expect production services companies will benefit from increasing demand for specialized extraction and manufacturing services that cultivators and other production intermediaries cannot efficiently perform themselves, and providers of testing services will benefit from increasingly robust testing and safety regulations. In the long run, we expect more permissive domestic and foreign laws will result in increased competition from large enterprises that are able to realize economies of scale or have operations in regions best suited for efficient, sustainable production.

■ Distribution

We divide the distribution segment of the cannabis industry into three subsegments: dispensaries, e-commerce and distribution services. Dispensaries are retail outlets where consumers purchase cannabis products for medical or recreational purposes. E-commerce includes digital applications used to enhance the cannabis shopping experience. Distribution services include wholesale and related transportation and logistics services. Participants in the distribution segment generally “touch the plant” and therefore must comply with state and local regulations—which often require licenses or permits—and must accept legal risks related to federal cannabis restrictions.

Dispensaries

Cannabis dispensaries are “point of sale” retail establishments where consumers may purchase medical or recreational cannabis products. Cannabis dispensaries are the face of the cannabis industry in many communities and, consequently, they occupy one of the most heavily regulated and scrutinized positions in the cannabis supply chain.

Dispensaries in established state-legal markets provide consumers with a typical retail shopping experience. Dispensaries typically range in size from 1,000 to 10,000 square feet of retail space. A dispensary may offer between 10 to 50 strains of cannabis flower and a variety of concentrates, edibles, topicals and accessories. Inventory is either acquired from cultivators and other wholesale product suppliers, or cultivated and produced internally. Products may be illustrated in menus or displayed on shelves and may also be available for customers to touch, smell or otherwise examine. Trained customer service staff, often known as “budtenders,” are typically available to educate customers about product offerings.

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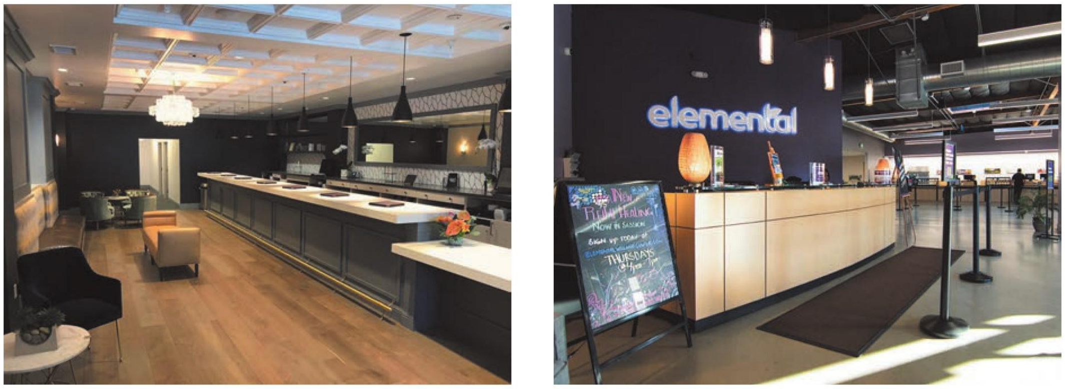
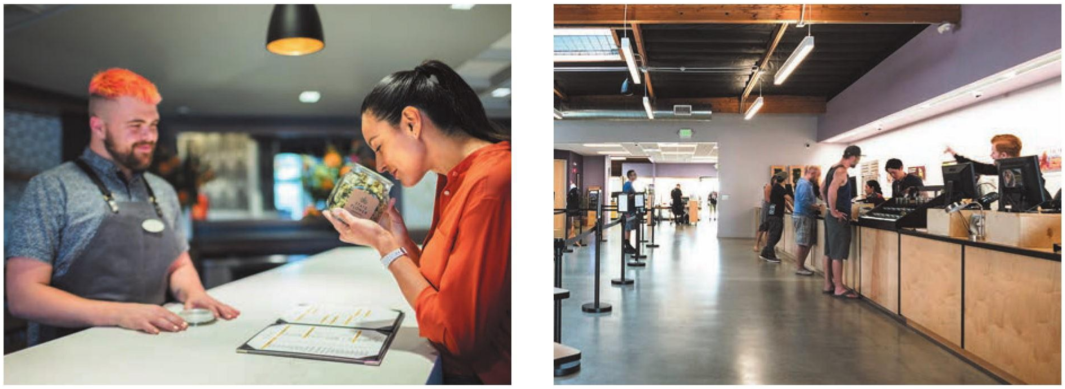
Dispensary Exterior Views



Dispensary Interior Views



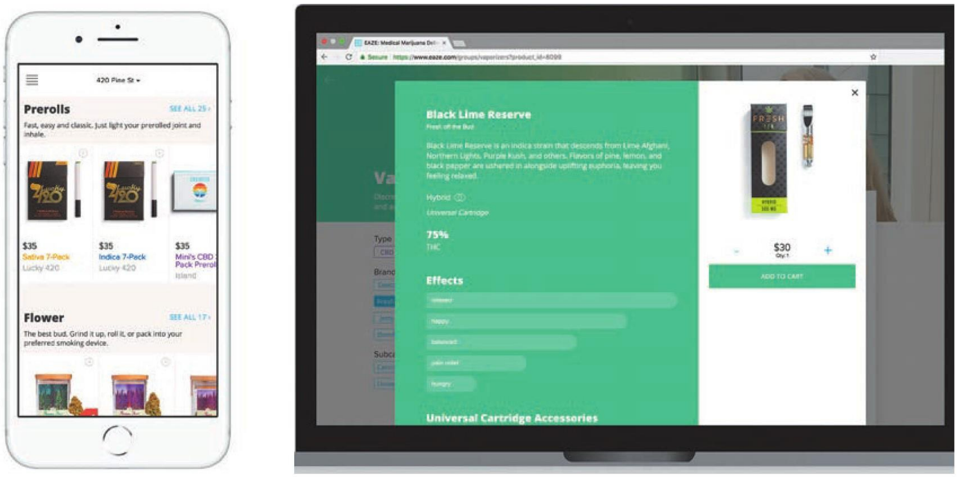
Customer Interactions

Because dispensaries "touch the plant," they must usually obtain a state license. Obtaining a state dispensary license generally involves a multi-month application process that requires the applicant to demonstrate compliance with complex license criteria and local regulations, such as producing their own products (or being prohibited from doing so), locating their dispensary outside a city's ordinary retail or commercial zones, operating as a nonprofit cooperative or collective, tracking cannabis products from "seed to sale," and collecting taxes on behalf of the state. Dispensaries must also comply with applicable regulations related to product testing, packaging and labeling, security, and health and sanitary conditions.

An extensive network of dispensaries across jurisdictions will facilitate the growth of the cannabis industry and its ability to attract new consumers. Currently, states with the most extensive networks of dispensaries are those that have both recreational and medical cannabis laws, such as Colorado, Oregon and Washington, and those that have had medical cannabis laws for a long period of time, such as California. For example, according to the Rocky Mountain High-Intensity Drug Trafficking Area, as of June 2017, in Colorado there were 491 cannabis dispensaries, compared to 392 Starbucks and 208 McDonald's.

E-Commerce

E-commerce refers to the use of digital applications to enhance the cannabis shopping experience. For example, a mobile application may facilitate the comparison of cannabis products and pricing or the delivery of orders from local dispensaries. These applications are being developed by a host of market participants, ranging from software development companies to retail dispensaries. Due to federal restrictions, cannabis e-commerce transactions are currently conducted only intrastate. If and when federal restrictions change to allow interstate cannabis commerce, we expect that home-delivery and e-commerce services will increase significantly. E-commerce solutions with high consumer engagement (such as those providing reviews and price comparisons for a broad selection of products) will help retailers acquire and retain customers.



Fast, easy and classic. Just light your prerolled joint and inhale.

The best bud. Grind it up, roll it, or pack into your preferred smoking device.

Black Lime Reserve is an indica strain that descends from Lime Afghani, Northern Lights, Purple Kush, and others. Flavors of pine, lemon, and black pepper are ushered in alongside uplifting euphoria, leaving you feeling relaxed.

420 Pine St
Prerolls
SEE ALL 25
$35
Sativa 7-Pack
Lucky 420
$35
Indica 7-Pack
Lucky 420
$35
Mini's CBD Pack Preroll
Island
Flower
SEE ALL 17
EAZE: Medical Marijuana Del
Secure https://www.eaze.com/groups/vaporizers?product_id=6099
Black Lime Reserve
Fresh off the Bud
Hybrid
Universal Cartridge
75%
THC
Effects
Type
Brand
Subca
$30
Qty: 1
ADD TO CART
Universal Cartridge Accessories

Sample E-Commerce Menus

Distribution Services

Distribution services is emerging as a prominent subsegment of the cannabis industry; services in this subsegment include wholesale distribution of cannabis products to retailers and production intermediaries, as well as related transportation and logistics services. Historically, a high percentage of product manufacturers have sold directly to retail dispensaries, and some of those manufacturers with established "in-house" distribution channels are now leveraging their experience to offer distribution services to third-party manufacturers.

Currently, distribution activities must be conducted only intrastate, and providers of distribution services must comply with regulations related to "touching the plant," including testing and tax-collection requirements. As laws are changed to allow more interstate and international transportation, purchasers will be able to compare products and prices on a national or international basis, and distributors who provide superior product selections and transportation logistics should have significant competitive advantage.

Distribution Opportunities

We believe opportunities in this segment include:

E-Commerce Distribution. The ability to accept electronic orders and deliver cannabis products on demand represents an attractive distribution channel and growth opportunity. Companies that provide digital retail platforms for cannabis products will benefit as consumers migrate to e-commerce transactions.

Branded and Vertically Integrated Dispensaries. We believe that consumers will ultimately concentrate their purchases with a small group of branded dispensaries that provide a distinct, consistent and trusted retail experience and offer supporting e-commerce solutions. Dispensaries that integrate vertically to offer their own branded products should achieve superior margins on those products.

High-profile Retail Locations. We see an opportunity for cannabis dispensaries to attract significantly more customers by establishing storefronts in malls and other high-profile retail locations.

"Land Grab" of Desirable Locations. Companies able to navigate the licensing and real estate challenges required to secure and operate multiple dispensaries in desirable locations should benefit from existing high barriers to entry and capture significant market share.

Distribution Challenges

Challenges in this segment include:

Customer Acquisition and Retention. Like e-commerce businesses in other industries, providers of e-commerce solutions in the cannabis industry face intense competition for customers who can easily change vendor loyalties. Companies will be challenged to minimize customer acquisition costs and retain customers.

Restrictive and Changing Regulations. Obtaining a state dispensary license or other type of distribution permit typically involves a multi-month application process that requires the applicant to demonstrate compliance with complex criteria. In addition to state laws and regulations, dispensaries and other distribution intermediaries are subject to county, municipal and other local regulations that may restrict or even prohibit distribution activities. The success of any dispensary operator or distributor depends on anticipating and complying with these regulations.

Tax Issues Related to Distribution. States and localities that legalize cannabis are focused on the potential to generate tax revenue from the industry. Ambiguous, constantly changing and potentially burdensome taxation rules may make it difficult for dispensary operators or distributors to remain in good standing with licensing, regulatory and tax collection agencies and may negatively impact their financial results.

Distribution Outlook

We expect dispensaries across the United States to increasingly seek to provide modern retail experiences that are supported by e-commerce applications. We also expect that the most well-run dispensaries will continue to generate significant cash flow at compelling margins. Dispensaries should be able to gain advantage by producing their own products, by developing strategic or exclusive relationships with specialty producers or by finding ways to generate customer loyalty. However, oversaturation in the number of dispensaries in certain jurisdictions, such as Colorado, has led to a very competitive environment, consolidation and moratoriums on issuing new local dispensary licenses by various municipalities.

The distribution segment is subject to some of the strictest and most frequently changing regulations applicable to the cannabis industry. While distribution opportunities may arise with changes in law, some legislation may cause significant disruption. For example, the number of dispensaries operating in the greater Los Angeles region is expected to decrease significantly in the short term as California's new cannabis regulatory agency begins its oversight and enforcement efforts in 2018.

The distribution services subsegment in the United States is still in its infancy and has experienced a number of growing pains related to a lack of well-established distribution channels. For example, a Nevada law generally requiring dispensaries to use third-party distributors proved troublesome when dispensaries sold out of product within 48 hours after legal recreational cannabis sales commenced in the state. As more distribution channels and points of contact are established, we believe that opportunities for third-party distribution services companies will increase.

In certain legalized international markets, such as Germany and Uruguay, cannabis products are sold primarily through existing pharmacy networks (Argentina plans to do the same). While cannabis-derived pharmaceuticals may ultimately be distributed the same way in the United States, we believe the future domestic distribution channels of other types of cannabis products will closely resemble those of alcohol and tobacco products.

Consumer Products

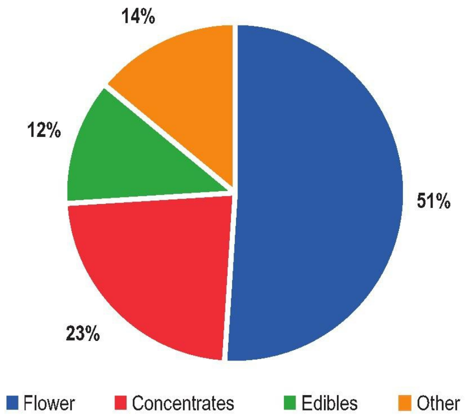
Cannabis may be consumed in many different forms, which fall into three broad categories: flower, concentrates and infused products. The most popular way to consume cannabis historically has been to smoke the flower or "bud" from the cannabis plant, which can be done using a pipe, a hand-rolled cigarette (often referred to as a "joint") or a water pipe (often referred to as a "bong"). Cannabis flower can also be vaporized and inhaled (using a product known as a "vaporizer"). The active compounds in cannabis can be extracted and concentrated into oil or waxlike substances known as concentrates. Concentrates, in turn, can either be vaporized and inhaled or infused into products known as "infused products." Infused products may be applied topically, such as lotions and creams, or consumed orally, such as food and drinks (known as "edibles"), capsules, pills and tinctures.

When smoke or vapor from heated flower or a concentrate is inhaled, the active compounds travel directly to the central nervous system and the physiological effects typically begin within one to five minutes. When infused products are consumed orally, the active compounds are digested in the stomach and metabolized by the liver before taking effect, typically in one to two hours. Compared to inhaled products, infused products deliver a smaller relative amount of cannabinoids to the bloodstream, but they produce longer-lasting effects.

Innovative companies continue to expand the universe of cannabis products, developing brands with packaging that increasingly emphasizes education about the product's effects and appeals to mainstream consumers. Cannabis flower is currently the most widely sold form of cannabis, but concentrates and infused products are gaining in popularity.

The following chart shows the combined relative sales by product category for Colorado, Oregon and Washington (three states with relatively mature recreational and medical cannabis markets) for the three months ended September 30, 2017.

Product Sales by Category: Q3 2017



Source: BDS Analytics

Cannabis Flower

Cannabis flower, or "bud," is the most popular product among cannabis consumers. Cannabis flower is usually green (although some varieties have a purple or orange hue), slightly sticky to the touch and spongy in density. The flower has a strong, pungent aroma owing primarily to the trichomes on the flowers, which contain the highest concentrations of cannabinoids and terpenes of any part of the plant.

Flower
HYBRID
BLOOM FARMS
SINGLE
FULL-FLOWER
HAND ROLL
HEADWATERS
100% Pesticide and Residual-Free
Strain:
Type:
Zkittlez
Sun Grown in California

Branded Cannabis Flower

There are thousands of different cannabis varieties, each with its own cannabinoid and terpene profile and corresponding aroma, flavor and potency. Leading cultivators are recognized each year in contests and ceremonies for their indica, sativa and hybrid varieties. Award-winning varieties—which are often given unique identifying names—frequently become the most in demand by consumers. Popular varieties today include "Blue Dream," "Gelato," "OG Kush," "Pineapple Express" and "Sour Diesel."

The flower of a typical cannabis variety produced for human consumption contains approximately 15% to 30% THC, approximately 0.1% to 1% CBD and nominal levels of other cannabinoids. Due to advancements in cultivation techniques, THC levels in cannabis flower available today are generally much higher than in the past.

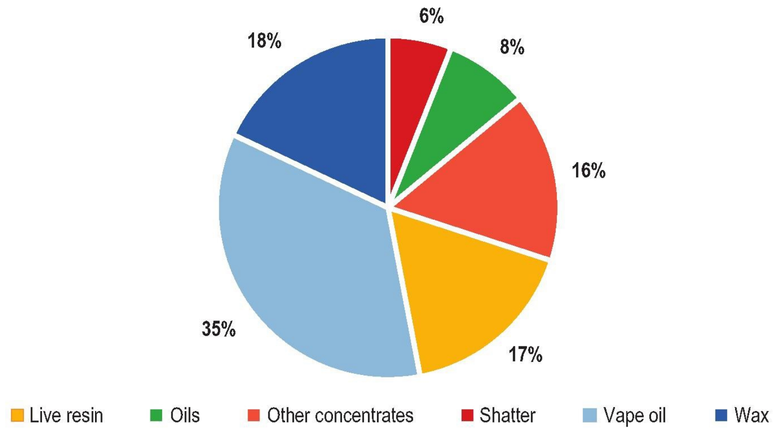
Concentrates

Cannabis can be processed into a variety of concentrates, many of which are sold as finished products for smoking or vaporizing and some of which can be infused into other products, such as edibles and topicals. Concentrates include CO_2 oil, butane hash oil or "BHO," shatter, wax, live resin, budder, kief, ice water hash and rosin.

Concentrates are quickly becoming popular for a host of reasons. Some believe vaporizing or ingesting concentrates are healthier methods of cannabis consumption than smoking plant material. Extracting cannabinoids from the cannabis plant produces higher-potency dosing (THC content can exceed 80% in concentrates), enables custom formulations and flavor profiles, and facilitates consumption that is more convenient and discreet than smoking. The concentration of specific cannabinoids varies across cannabis varieties and even across flowers from the same plant, which limits the accuracy of laboratory tests conducted on a sample of plant material. Cannabis concentrates, however, are generally homogeneous and their active elements can be more precisely measured and reported so as to facilitate standardization of products and accurate dosing by consumers.

The following chart shows the combined relative sales by category of concentrates for Colorado, Oregon and Washington for the three months ended September 30, 2017.

Concentrates Sales by Category: Q3 2017



Source: BDS Analytics

Concentrates are prepared with extraction techniques that fall into two general categories, solvent-based extraction and solvent-free extraction. Solvent-based extraction techniques include the use of hydrocarbon, carbon dioxide (CO_2) or ethanol solutions to chemically isolate cannabinoids and other active compounds. Solvent-based extraction can be performed relatively quickly and can produce high yields and customized formulations, but requires the use of expensive equipment and skilled labor and also may leave residual solvents in the resulting concentrate. Solvent-free techniques include the use of filters, ice water or heat to physically separate parts of the cannabis plant with high cannabinoid concentrations. Generally, solvent-free extraction is inexpensive and can be performed without specialized equipment, but it is also slow and labor-intensive and it typically results in low yields.

Hydrocarbon Extraction

Hydrocarbon extraction is a process whereby a hydrocarbon solvent (typically butane or propane) chemically extracts cannabinoids, terpenes and other compounds from cannabis plant matter. The solvent is then purged using heat and pressure, leaving a concentrated form of the extracted compounds. Because hydrocarbon extraction involves a risk of explosion and usually leaves behind residual solvents, regulations are becoming more restrictive in specifying where and how the process can occur and prescribing acceptable levels of residual solvents in the resulting products. Concentrates prepared through hydrocarbon extraction—including BHO, shatter and wax—are popular with some consumers because hydrocarbon extraction generally preserves terpenes and the source plant's aroma and flavor.

CO_2 Extraction

CO_2 extraction is a process whereby cannabis is introduced into a system of supercritical CO_2 (CO_2 at a pressure and temperature at which it exhibits properties of both a gas and a liquid). Cannabinoids and other compounds dissolve in the supercritical CO_2; pressure is released, and the CO_2 then evaporates, leaving a concentrated form of the dissolved compounds. CO_2 extraction is considered a relatively safe and clean extraction process because CO_2 is nonvolatile, CO_2 concentrates are generally free of residual solvents and CO_2 extraction kills mold and bacteria. CO_2 extraction is commonly used to produce viscous CO_2 oil for vaporizer cartridges and low-terpene concentrates for infused products.

Ethanol Extraction

Ethanol extraction is a method used in a number of industries to extract essential oils and food flavorings from plants. When used to produce cannabis concentrates, the process involves soaking cannabis plant material in ethanol, which separates cannabinoids, terpenes and other compounds from the plant matter. The solution is then heated until the ethanol is purged to acceptable levels. Ethanol is generally much safer to use for extraction than hydrocarbons and is particularly useful for creating concentrates with "whole-plant" compound profiles that mirror the source plant. Unfortunately, ethanol also extracts certain plant compounds—particularly chlorophyll—that have undesirable aromas and flavors.

Solvent-Free Extraction

Most solvent-free extraction techniques are inexpensive and do not require special training or equipment, but they also tend to produce low yields. Kief, ice water hash and rosin are examples of concentrates produced with solvent-free methods. Kief is a collection of trichomes that are separated from cannabis flower by sifting the flower with specialized filtering screens. Ice water hash is a collection of trichomes produced by stirring cannabis in ice water, filtering the mixture through a sequence of increasingly fine screens, removing the trichome collection from the finest screens and allowing it to dry. Rosin is created by heating and pressing cannabis plant material between parchment paper and collecting the concentrate that oozes onto the paper.

SINGLE ORIGIN
BLOOM FARMS
HIGHLIGHTER
ALL-NATURAL CO2 CANNABIS OIL
GUILD EXTRACTS
Rosin
HYBRID
BLUE DREAM

Oil Concentrate (Cartridge) *BHO Wax* *Rosin*

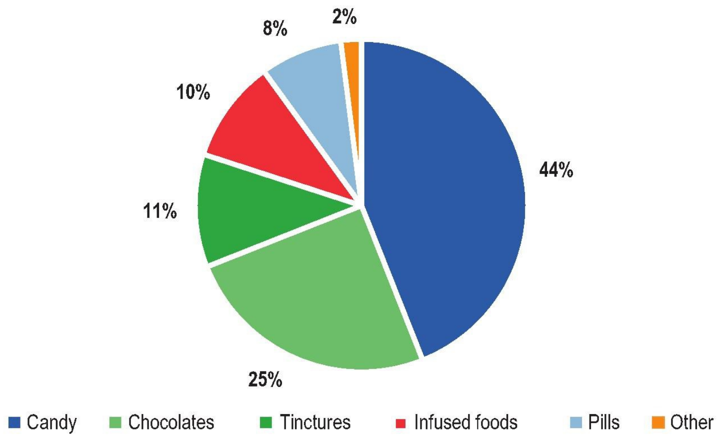
Cannabis Concentrate Products

Infused Products

Infused products are ingestible products that have been infused with cannabinoids and other active compounds from the cannabis plant. There are two general categories of infused products: those consumed orally, such as foods and beverages (known as "edibles"), capsules, pills and tinctures; and those applied topically, such as lotions, balms and creams. Infused products may either be infused with concentrates (that are prepared through one of the extraction techniques discussed previously) or prepared with other infused products, such as cannabis-infused butter (a concentrate prepared by heating cannabis in butter to release the active compounds, and then filtering out the plant material).

The following chart shows the combined relative sales by category of infused products for Colorado, Oregon and Washington for the three months ended September 30, 2017.

Infused Products Sales by Category: Q3 2017



Source: BDS Analytics

Edibles

Popular edibles include infused candies, chocolates and beverages. The active compounds in edibles are digested and metabolized by the liver before taking effect; typically, the time from ingesting to onset of an effect is one to two hours, but the effect lasts longer than that resulting from inhaling smoke or vapor. Edibles generally deliver body-focused effects, which may be preferred by consumers seeking pain relief.

DÉFONCÉ
CHOCOLATIER
COFFEE
MOUNTJOY SPARKLING
NATURAL
PEACH
ORANGE
cannabis infused
SPARKLING WATER
MEDICAL CANNABIS
BREEZ
ROYAL MINTS
1000 MG THC
2 MG THC PER PIECE
cloud
MEDICAL CANNABIS MILK CHOCOLATE BLUEBERRIES
GOOD
10 MG
BROWNIES
CBD · TROPICAL TWIST
VALHALLA
Gummies
TROPICAL TWIST

Edibles: Chocolate, sparkling water, mints, candies, brownies, gummies

Capsules and Tinctures

Capsules are cannabis concentrates with various cannabinoid profiles encapsulated in a gelatin coating for easy swallowing. Capsules are digested and metabolized like edibles; typically, the time from swallowing to onset of an effect is one to two hours. Tinctures are concentrates suspended in an alcohol solution and are usually placed under the tongue using a dropper; effects generally begin within 10 to 15 minutes. Capsules and tinctures are preferred over edibles by some consumers who believe they deliver more consistent dosing than edibles.

wana CAPS
HIGH THC CAPSULES
THC/CBD BALANCED CAPSULES
HIGH CBD CAPSULES

Capsules

RITUAL
ANYTIME
HEMP SEED
CANNABIS
CHERRY
CINNAMON
YLANG YLANG
BERGAMOT

Tincture

Topicals

Topicals are any form of product infused with cannabinoids and applied topically, such as lotions, balms, creams, lubricants and transdermal patches. Topicals often include noncannabis ingredients, such as essential oils or herbal extracts. They are commonly used for localized relief of muscle soreness and inflammation and for relief of headaches and cramping.

PAPA & BARKLEY
RELEAF BALM™
SOOTHING
RELAXING
CALMING

OMEDIBLES
MEDICAL CANNABIS
LAVENDER
EPSOM SALT
MINERAL SOAK

Topicals

Vaporizers and Accessories

Smoking or vaporizing cannabis flower or concentrates is the most popular method of cannabis consumption, in part because the effects of inhaled cannabis smoke or vapor begin almost immediately. Accessories used to smoke cannabis include glass, wood or metal pipes; glass or plastic water pipes known as "bongs"; and cigarette papers used to roll "joints." A vaporizer is a device that heats cannabis flower or concentrate to a temperature at which its active compounds boil and can be inhaled as vapor. Vaporizers are increasing in popularity faster than any other cannabis-consumption device, in some measure because vaporizing is perceived by many as a healthier method of cannabis consumption than smoking. Distinguishing features of a vaporizer include whether it vaporizes flower or concentrate, the form of the heating mechanism, or "atomizer," power output, battery efficiency, durability, reusability (there are both refillable and disposable vaporizers) and design aesthetics. Hundreds of vaporizers are marketed, ranging from simple to complex, including handheld vaporizers that retail for $10 to $500 and tabletop vaporizers that retail for $100 to more than $1,000.

DOMPEN
indica
midnight berry
500mg
DOMPEN

Vaporizers

Cannabis Consumers Using Vaporizers

In addition to smoking and vaporizing devices, an increasing variety of other cannabis-related accessories are available, including personal storage and transportation products. Some of these products focus on safety or discretion, such as childproof containers and smell-proof bags. Other products are designed more for style, such as vaporizer pouches and tabletop storage containers intended as decor. The market for both safety-focused accessories and style pieces is expected to grow as laws and regulations increasingly impose requirements related to storage and transportation and as taboos regarding cannabis use wane.

STINK SACK
LOCKS IN ODORS
STINK SACK
STINK SACK

Accessories

Pharmaceuticals

Cannabinoid-based pharmaceuticals are drugs containing cannabinoids or cannabinoid-like compounds that are either derived from natural cannabis or chemically synthesized. A handful of such drugs have been approved for use to treat certain medical conditions both in the United States and elsewhere. Examples of cannabinoid-based pharmaceuticals that have been approved for use in various countries include Marinol, Syndros, Cesamet and Sativex. Another cannabinoid-based pharmaceutical, Epidiolex, has not yet been approved but could become the first medicine derived from the cannabis plant to be approved by the U.S. Food and Drug Administration (FDA).

The drug Marinol is comprised of dronabinol (a synthetic THC) encapsulated with sesame oil in a soft gelatin capsule. Marinol has been approved by the FDA for use in treating (i) anorexia associated with weight loss in patients with AIDS and (ii) nausea and vomiting associated with cancer chemotherapy. Marinol is a Schedule III controlled substance under the U.S. Controlled Substances Act (CSA). Syndros is a drug that contains dronabinol in a liquid solution; it has been approved by the FDA for use by adults in treating the same symptoms for which Marinol has been approved. Syndros is a Schedule II controlled substance under the CSA. Forms of dronabinol have been approved for use in jurisdictions outside the United States, including Canada and Denmark.

Cesamet is a drug made up of encapsulated nabilone, a synthetic cannabinoid similar to THC. Cesamet has been approved by the FDA for use in treating nausea and vomiting associated with cancer chemotherapy. Cesamet is a Schedule II controlled substance under the CSA. Forms of nabilone have been approved for use in jurisdictions outside the United States, including Australia, Canada, Mexico and the United Kingdom.

Sativex is a mouth spray used for treatment of spasticity caused by multiple sclerosis; it includes THC and CBD derived from cannabis. Sativex was first approved for use in the United Kingdom in 2010, and has been approved for use in at least 30 countries (but not in the United States). Sativex is manufactured by U.K.-based GW Pharmaceuticals and is generally recognized as the first prescription drug in the world to include plant-based cannabinoids. The cannabis extract used in Sativex is a Schedule I controlled substance under the CSA.

NDC 0037-1221-50
Cesamet
(Nabilone Capsules)
1 mg
MEDA
Sativex 2,7mg/2,5mg
Solución para pulverización bucal
Delta-9-tetrahidrocannabinol - Cannabidiol
3 envases pulverizadores de 10 ml
Vía bucal
GW
Almirall

Pharmaceuticals

Epidiolex is an oral formulation of cannabis-derived cannabidiol, or CBD, intended to treat severe forms of childhood epilepsy. Epidiolex has not been approved for use in any country, but the drug's manufacturer, GW Pharmaceuticals, recently submitted a New Drug Application for Epidiolex to the FDA, which is an important step toward FDA approval in the United States. If approved by the FDA, Epidiolex would be the first FDA-approved prescription drug derived from cannabis. The cannabis extract used in Epidiolex is considered to be "marijuana," a Schedule I controlled substance under the CSA. Therefore, even if Epidiolex were approved by the FDA, Epidiolex would need to be rescheduled and excepted from the "marijuana" definition before it could be lawfully prescribed in the United States.

Consumer Products Opportunities

We believe opportunities in this segment include:

Consumer Product Brands Focused on Health and Wellness. We believe there is a substantial opportunity for companies to develop leading brands of cannabis-based health and wellness products. Marketing a broad line of such products under a common brand should provide a competitive advantage.

Direct E-Commerce Distribution. The e-commerce market for cannabis products is expected to expand and consumer awareness of product options is expected to increase, enabling more consumer product companies to sell their products directly to consumers through online purchasing platforms rather than selling only through wholesale.

Advanced Vaporizer Functionality. Vaporizer technology has advanced rapidly in recent years, a trend we expect to continue. In the future, vaporizers may be able to identify the composition and potency of the product being consumed, monitor consumption and dosing of the product, or reorder the product at the push of a button.

Specialty Formulations. We believe that scientific knowledge about the relationships between specific cannabinoid formulations and targeted health conditions will continue to improve, and markets will be created for highly specialized products developed to relieve particular symptoms.

FDA Approval and CSA Rescheduling. If Epidiolex is approved by the FDA and rescheduled under the CSA to permit lawful prescriptions to be written within the United States, it would be the first federally legal cannabis-derived drug in the country. Such a precedent could result in a significant increase in the use of cannabis by consumers as medicine, and it could also be followed by similar approvals in the United States for other cannabis-derived drugs.

Consumer Products Challenges

Challenges in this segment include:

Marketing and Customer Loyalty. As more products become available to consumers through dispensaries and e-commerce solutions, consumer product providers may need large marketing budgets to drive product awareness and customer loyalty.

Wholesale and Retail Distribution. Providers of cannabis products may struggle to develop wholesale and retail distribution relationships because of the breadth of products being marketed. Providers should seek to develop strong relationships with a large number of dispensary operators, directly or through a distributor, in order to obtain preferred shelf placement.

FDA Approval: Risk, Time and Expense. Assuming that cannabis-derived drugs will eventually be permitted to be sold in the United States, considerable time and expense will be spent by manufacturers to obtain FDA approval and bring approved products to market. There is no guarantee that investments of significant time and money into research, development and clinical trials will result in FDA approval of cannabis products.

Product Liability Claims. Companies may be exposed to various product liability claims associated with human consumption of cannabis products. Consumer claims that products cause injury or illness, include inadequate instructions for use or warnings concerning health risks, or cause possible side effects or interactions with other substances may be expensive to defend or settle.

Consumer Products Outlook

We believe that there are significant market opportunities for well-recognized brands to develop in various categories of consumer products, particularly in flower, concentrates, edibles and vaporizers. In addition, we believe that there are opportunities for companies targeting niche applications for the pet industry. Many companies will struggle to create strong brands because the consumer products segment generally has low barriers to entry and is currently oversaturated. As the cannabis industry and legal environment develop, we expect that national brands will emerge from companies with large marketing budgets, operational scale and reputations for quality, and that large alcohol, tobacco, consumer products and pharmaceutical companies will play a larger role in this segment.

■ Business Solutions

The business solutions segment of the cannabis industry comprises business software, such as seed-to-sale tracking solutions, and business services, such as legal, compliance, operational consulting and financial services. Software and services providers in this segment generally do not "touch the plant" and do not require cannabis-related permits or licenses.

Business Software

Software solutions tailored to the cannabis industry are present throughout the cannabis supply chain. Although solutions from other manufacturing and retail industries are used in the cannabis industry, industry-specific solutions are emerging as some of the most popular. Some companies provide point solutions that target bottlenecks in the supply chain, while others offer broad platforms that consolidate multiple capabilities. Industry-specific software applications exist and are being developed in the following areas: cultivation cycle management; concentrate production management; infused product manufacturing management; product testing and compliance; retail operations (including point-of-sale, inventory, tax reporting and compliance solutions); mobile, e-commerce and delivery applications; supply-chain management; customer relationship management; and management reporting and business intelligence.

Cannabis Software Platforms

Business Services

The business services market includes (i) operational consulting, including facility planning, construction and security; (ii) financial services, including accounting and payment-processing services; (iii) legal, compliance and other professional advisory services; (iv) temporary and full-time staffing services; (v) real estate services; and (vi) industry events and conferences. These services are typically provided by professional services firms; some of these firms focus solely on the cannabis industry while others serve a broad range of industries.

Business Solutions Opportunities

We believe opportunities in this segment include:

Industry-specific Solutions. As the cannabis industry emerges, there will be a significant market opportunity for providers of solutions tailored for the industry. Point-solution providers may be acquisition targets if larger companies enter the market in the future.

Integrated Platforms. We believe that integrated "seed-to-sale" solutions will be ideally positioned.

"Big Data" Analytics. We believe that there is an attractive opportunity to develop and license industry datasets. Such datasets should provide strategic advantages to organizations that establish substantial reach early and may also be licensed more broadly to enhance targeting, services, cross-sales and product development.

Business Solutions Challenges

Challenges in this segment include:

Development and Deployment Risk. Due to the time and investment required to develop software products and the emerging nature of the cannabis industry, there is a risk that developed applications may not be effective or widely adopted. In addition, certain segments of the cannabis industry are more mature than others; this disparity may present challenges in developing solutions that support cohesive and scalable business models.

Low Barriers to Entry. Numerous sectors of the business services market are becoming increasingly crowded.

Business Solutions Outlook

The cannabis industry presents a significant market opportunity for software and services providers because of the large number of potential new clients and the need for industry-specific solutions. In particular, we believe that substantial opportunities exist for providers of industry-specific, platform and "big data" solutions. We also believe that financial, legal and compliance service providers that have developed knowledge of the cannabis industry are well positioned for growth. Similar to the production segment, large software and services companies serving traditional industries have been reluctant to enter the cannabis market due to concerns over the regulatory landscape. While this dynamic has created a short-term opportunity for some smaller companies, as the regulatory environment becomes clearer we expect competition in this segment to increase significantly as large companies enter the market.

Digital Media

The digital media segment of the cannabis industry includes digital content, networking and directory platforms. Digital media providers do not "touch the plant" and generally do not need a cannabis-related license or permit. Digital media focused on cannabis is a niche sector within the broader digital media market. Companies in this segment compete for viewers and subscribers and generally draw revenue from content licensing fees, service fees, advertisement fees and subscription fees. They provide a broad range of content and networking tools, including news related to the cannabis industry and legalization efforts, humor and entertainment focused on the cannabis-user demographic, traditional media and branding services, social networking tools that allow users to share pictures and information related to their cannabis activities, and business directory tools that connect industry participants.

Favorite
Denver, CO
Our out of this world Afghani from Euflora's indoor grow in Denver, Colorado.
(30) Recent Comments
I think I'm high just looking at it....it's hypnotizing me
Modern grower
EPISODE 1

Cannabis Digital Media

Digital Media Opportunities

We believe opportunities in this segment include:

Premium Content. We believe that opportunities exist to establish industry-specific publications and media platforms for both the business-to-business and business-to-consumer markets that are viewed as the legitimate voices of the industry.

Mobile Applications. E-commerce and digital media applications are well positioned for mobile deployment within the cannabis industry. We expect a proliferation of mobile applications, even in the early stages of the industry.

Enabling Technology. Continued development of core and shared technology platforms remains an opportunity for digital media companies seeking to provide a better user experience. Technologies that provide targeted experiences should enable digital media companies to realize greater returns on investments.

Digital Media Challenges

Challenges in this segment include:

Limited Number of Advertisers. Broad, general-market advertisers are not commonly participating in the cannabis industry due to concerns about legal compliance and mass-market perception. As a result, companies are currently competing for limited advertising revenue targeted at the cannabis-user demographic.

Venues. Established digital media companies—such as Facebook, Google, Twitter and Yelp—limit the activities of cannabis-focused media companies on their sites in accordance with company policies. This creates opportunities for niche publishers in the near term, but we believe that, ultimately, large media companies will view cannabis as a mainstream industry.

Digital Media Outlook

The opportunity for cannabis-oriented digital media is substantial. We believe that companies with well-executed strategies will emerge as the recognized voices of the industry and will be relied on by consumers for a wealth of information from product recommendations to industry news. As regulatory constraints relax, we expect the currently disparate and fragmented digital media services segment to consolidate into integrated publishing, mobile and e-commerce offerings. However, as stated previously, we believe that digital media companies focused solely on the cannabis industry will eventually face considerable competition from—but may be logical acquisition targets for—traditional media companies.

CHAPTER IV

U.S. Legal Landscape

The legal landscape for the cannabis industry in the United States continues to be characterized by conflict between federal prohibition and the steady advance of state legalization. According to federal policy, Americans can access tobacco, alcohol and prescription drug products that kill thousands each year, but they cannot access cannabis because it is a dangerous drug with no currently accepted medical application in the United States (notwithstanding the federal government holds a U.S. patent for methods of treating diseases with cannabinoids). Meanwhile, 46 U.S. states permit some use of cannabis products as medicine by adults or children, and 8 of those states have laws that regulate cannabis like alcohol.

The U.S cannabis industry has proven adept at navigating this federal-state conflict and is experiencing rapid growth despite it. Moreover, we believe that federal policy will move (and may already be moving) in a new direction—one that would facilitate federal approval of cannabis-derived drugs and ultimately, we believe, give rise to a regulatory and political environment in which the U.S. Congress could fully legalize both medical and recreational cannabis.

In this chapter, we summarize three categories of state cannabis laws and examine certain federal laws and policies that impact the cannabis industry, including federal laws related to drug and food regulation, banking and finance, and intellectual property. Finally, we offer our views about how the cannabis legalization trend and related developments likely lead to a federally legal U.S. cannabis industry.

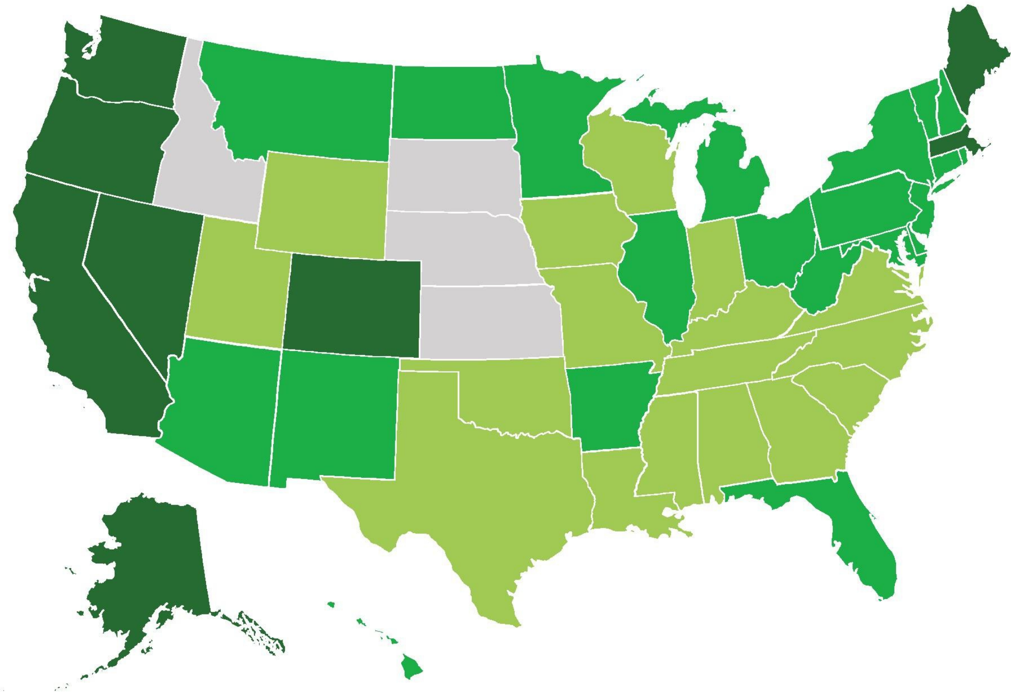
U.S. State Law

Of the 51 jurisdictions comprising the 50 U.S. states and the District of Columbia, 47 have enacted at least one law that permits the manufacturing, distribution, dispensing or possession of cannabis or concentrates. These laws fall into three general categories:

- 29 U.S. states and the District of Columbia have enacted medical cannabis laws that permit the production and possession of cannabis or concentrates for use in treating a broad range of qualifying medical conditions.
- 19 U.S. states have enacted narrow CBD/limited laws that permit possession of small amounts of low-THC/high-CBD cannabis concentrates for use in treating a few serious medical conditions—in particular, severe forms of childhood epilepsy.
- 8 U.S. states have enacted recreational laws that permit the commercial production and sale of cannabis to adults for recreational and other uses.

Some states have passed more than one of these laws, and some state laws do not fall clearly into any one of these categories. Florida and Delaware have both medical cannabis and CBD/limited laws. Every state that has enacted a recreational law has also passed a medical cannabis law. A District of Columbia law that permits adults to grow and consume cannabis is often cited as a recreational law; however, we do not characterize it as such because it does not permit the commercial production and sale of cannabis. The following map of the United States shows states with medical cannabis laws, CBD/limited laws or recreational laws (a state with more than one of these laws is represented on the map by its most permissive law).

U.S. State Cannabis Laws (January 2018)



🟩 **Recreational Law**

Alaska
California
Colorado
Maine
Massachusetts
Nevada
Oregon
Washington

⬜ **No Recreational, Medical Cannabis or CBD/Limited Law**

Idaho
Kansas
Nebraska
South Dakota

🟩 **Medical Cannabis Law**

Arizona
Arkansas
Connecticut
Delaware
Florida
Hawaii
Illinois
Maryland
Michigan
Minnesota
Montana
New Hampshire
New Jersey
New Mexico
New York
North Dakota
Ohio
Pennsylvania
Rhode Island
West Virginia
Vermont

🟩 **CBD/Limited Law**

Alabama
Georgia
Indiana
Iowa
Kentucky
Louisiana
Mississippi
Missouri
North Carolina
Oklahoma
South Carolina
Tennessee
Texas
Utah
Virginia
Wisconsin
Wyoming

An exhaustive review of each jurisdiction's laws is beyond the scope of this report; instead we discuss issues commonly addressed by each category of cannabis laws.

Medical Cannabis Laws

In 1996, California enacted the first medical cannabis law of any U.S. state, followed in the late 1990s by Alaska, Maine, Oregon and Washington. Since the beginning of 2000, 24 more states and the District of Columbia have passed medical cannabis laws that permit the production and possession of cannabis or concentrates for use in treating a broad range of qualifying medical conditions.

A state medical cannabis law permits a patient, with a doctor's recommendation, to use cannabis to treat any qualifying medical condition designated by the law. It is illegal for a doctor to "prescribe" a Schedule I controlled substance under the U.S. Controlled Substances Act (CSA), so medical cannabis laws typically require a doctor's "recommendation" rather than a prescription. Some medical cannabis laws require a written recommendation, while others allow an oral recommendation. States may impose a variety of other requirements or restrictions on a doctor or patient relating to medical cannabis access, such as patient registration with a state medical cannabis registry, submission of a patient's fingerprints or prohibition of use by convicted felons or certain government employees (for example, firefighters).

The number and nature of qualifying conditions included in medical cannabis laws vary widely. Some laws designate relatively few or highly specific medical conditions, while other laws include many conditions or highly subjective conditions, such as chronic pain. Some medical cannabis laws also give doctors discretion to recommend cannabis for conditions not specifically designated. In aggregate, across all medical cannabis laws in the United States, cannabis is legally recognized as a form of therapy or medicine for more than 50 qualifying conditions. Common qualifying conditions include Alzheimer's disease, amyotrophic lateral sclerosis (ALS), anorexia, arthritis, cachexia, cancer, chronic pain, Crohn's disease, epilepsy, glaucoma, hepatitis C, HIV/AIDS, inflammation, migraine, multiple sclerosis (MS), nausea, nervous system degeneration, Parkinson's disease, post-traumatic stress disorder (PTSD) and spasms.

Some medical cannabis laws restrict the form of cannabis or the means of consumption. For example, Pennsylvania's medical cannabis law, enacted in 2016, prohibits smoking or vaporizing cannabis flower, prohibits the incorporation of cannabis into foods by anyone other than the patient or the patient's caregiver, and authorizes cannabis to be dispensed only in certain concentrated forms.

Medical cannabis laws generally permit cannabis cultivation and distribution by a state-licensed cultivator or dispensary, by a qualified patient or by a designated caregiver of the patient. A qualified patient or the patient's designated caregiver generally may grow only an amount of cannabis deemed sufficient for the patient's personal use. Some medical cannabis laws permit patients or caregivers to grow cannabis only if they cannot practically obtain it by other means. For example, certain states permit patients to grow cannabis only if they reside more than a specified distance from the nearest licensed dispensary. Some states allow qualified patients and designated caregivers to collectively or cooperatively aggregate their cultivation activities.

State-licensed cultivators and dispensaries must satisfy various licensing requirements related to health, safety and security. In states that permit or require vertical integration, a licensee may be part of a single cultivation and dispensing enterprise. In other states, a licensed cultivator may be permitted to sell to unaffiliated licensed dispensaries or delivery services, which then retail medical cannabis to patients.

Each state has its own rules about whether medical cannabis activities may be engaged in for profit. In states where caregivers and qualified patients collectively or cooperatively aggregate their cultivation and distribution efforts, participants generally are allowed to charge amounts necessary to recover the reasonable costs associated with those activities but may not operate for profit. In states that allow licensed cannabis activities, such as cultivation and dispensing, the organizations engaged in those activities generally may seek to earn a profit.

CBD/Limited Laws

From 2014 through 2017, a total of 19 U.S. states enacted CBD/limited laws that generally permit possession of small amounts of low-THC/high-CBD cannabis concentrates for use in treating a few serious medical conditions. Most of these laws limit qualifying medical conditions to severe forms of epilepsy or seizure disorders, but some laws designate a moderately broader set of conditions.

Most CBD/limited laws allow CBD use by children. Many of these laws were enacted in the context of high-profile stories about CBD treatments for children with severe seizure disorders, and the laws have been given names like Carly's Law (Alabama), Haleigh's Hope Act (Georgia) and Julian's Law (South Carolina). Charlotte's Web is a low-THC/high-CBD cannabis strain named for Charlotte Figi, a young Colorado girl whose parents treat her seizure condition with CBD oil. Her case was featured in Dr. Sanjay Gupta's popular CNN special, *Weed*.

In general, each CBD/limited law establishes a narrow legal framework for use of low-THC/high-CBD cannabis concentrates. Certain CBD/limited laws designate only one or several producers of permitted cannabis concentrates; in some cases, these producers include a state university or research institution. Other CBD/limited laws establish no legal framework for the production or distribution of permitted products and merely provide a narrow affirmative defense for state-law cannabis possession and use charges.

Recreational Laws

In 2012, Colorado and Washington voters passed the first laws in the United States (and the world) to permit the commercial production and sale of cannabis to adults for recreational and other uses. Alaska and Oregon passed similar recreational laws in 2014. And in the November 2016 elections, four more states—California, Maine, Massachusetts and Nevada—passed recreational laws. (Of the five recreational laws included on November 2016 ballots, only Arizona's law did not receive voter approval.)

State recreational laws permit adults aged 21 years or older to legally purchase and use cannabis sold by state-licensed commercial businesses. There are no state residency requirements for adult consumers, and out-of-state visitors with valid proof of age may legally purchase cannabis, giving rise to "cannabis tourism" in states with extensive dispensary networks like Colorado, Oregon and Washington. Cannabis typically may not be consumed in public spaces or private establishments open to the public, such as parks and restaurants. Recreational laws also generally permit adults to cultivate a limited number of cannabis plants (typically, 4 to 6) for personal use. (Washington is an exception, however, and makes personal cultivation a felony unless it is done by a person registered in the state's medical marijuana database.) Unlike state medical cannabis laws, which may restrict the form of cannabis products available, recreational laws permit production and sale of most common forms of cannabis products, including a wide variety of flower, concentrates and infused products.

State recreational laws designate state agencies to issue commercial cannabis licenses and regulate participants in the cannabis supply chain. Some of these agencies are newly established specifically to regulate cannabis, such as California's Bureau of Cannabis Control (BCC) or Massachusetts's Cannabis Control Commission. Others are existing state agencies (and typically oversee tax or alcohol matters), such as Nevada's Department of Taxation or Oregon's Liquor Control Commission. These agencies also may regulate state medical cannabis industries, as do Colorado's Marijuana Enforcement Division, Washington's Liquor and Cannabis Board and California's BCC.

State regulatory agencies issue separate licenses for different types of commercial cannabis activities. Common categories of licenses include cultivation, production, manufacturing, distribution, transportation, laboratory testing and retail. A state may further provide for multiple types of licenses within a category. For example, California's recreational law provides for 12 types of cultivation licenses, which vary according to factors such as the size of a cultivation facility and indoor or outdoor cultivation. Most states allow companies to hold licenses in multiple categories, thereby allowing vertically integrated cultivation, manufacturing and retail businesses. Washington is an exception—in most cases, a business is prohibited from holding licenses across categories. Even states that allow vertical integration typically prohibit the holder of a laboratory testing license from holding licenses in other categories.

State laws give significant power to counties and municipalities to impose zoning and permitting requirements that may severely restrict or prohibit cannabis activities. California requires a state-license applicant to demonstrate it has all permits, licenses and approvals required under local law, and many California cities and counties have effectively banned the recreational cannabis industry. Massachusetts allows towns that voted "No" on the state's recreational law to ban cannabis businesses through December 2019 and requires other towns that wish to prohibit cannabis businesses to do so through a local ballot initiative.

Each state has chosen to levy significant taxes on the recreational cannabis industry, and some state laws authorize local governments to levy additional cannabis-related taxes. Nevada imposes a 15% excise tax on cannabis wholesales by cultivators and a 10% excise tax on retail sales. Oregon and Massachusetts charge a state excise tax of 17% and 10.75%, respectively, and each state authorizes local governments to levy up to another 3%. Washington originally imposed a 25% excise tax on cannabis sales at each of three different points in the supply chain—grower to processor, processor to retailer and retailer to consumer—but now charges a single 37% tax on retail sales. California imposes a 15% excise tax. All state and local cannabis-specific excise taxes are in addition to normal state and local sales tax. Although the possibility of generating significant tax revenue is one reason state governments have embraced legal cannabis, some proponents of legalization argue that high tax rates will keep consumer prices high and discourage consumer transition to legalized markets.

State governments continue to adjust recreational cannabis regulations in an effort to create favorable industry conditions and address health and public safety concerns. State-licensed recreational cannabis businesses must comply with a host of requirements related to security (such as video surveillance, alarm system requirements and owner/operator criminal background checks), product diversion (particularly seed-to-sale tracking requirements), product safety and quality (including product labeling requirements and potency and contaminant testing), and general business operations (such as restrictions on advertising and compliance with energy and environmental standards).

U.S. Federal Law

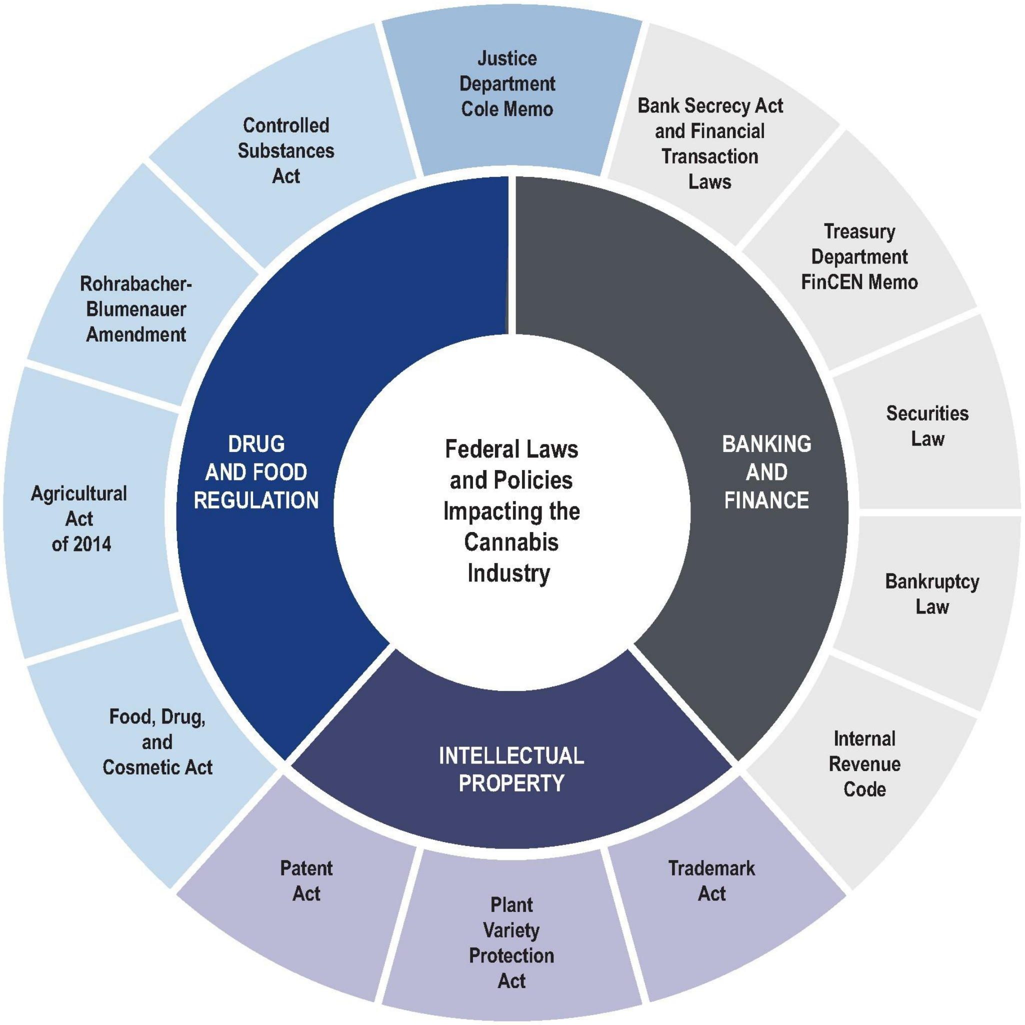
Current federal law effectively prohibits all cannabis use and all commercial cannabis activity in the United States. Producing, selling and possessing cannabis are federal crimes. No cannabis-derived drug has ever been federally approved for use in treating any medical condition. Otherwise legitimate business transactions conducted by cannabis companies—and their banks, for those who can access banking services—are legally suspect. Certain intellectual property and bankruptcy protections critical to many U.S. businesses are not available to cannabis companies. Cannabis companies pay federal income tax at effective rates significantly higher than other businesses.

Despite official prohibition, federal policies and laws recently passed by the U.S. Congress have carved out a limited space in which the state-legal cannabis industry has managed to thrive. Enforcement policies published by the U.S. Department of Justice (DOJ) have unofficially invited cannabis business to proceed if certain conditions are respected. The U.S. Department of the Treasury (DOT) established reporting policies that create room for banks to service the cannabis industry. Federal budget legislation has prevented allocated funds from being used to prosecute conduct that complies with state medical cannabis laws.

Recent developments indicate that the federal government may be pursuing policies and practices that create space for cannabis research and approval of cannabis-derived drugs. In particular, the U.S. Drug Enforcement Agency (DEA) adopted a new policy in 2016 designed to increase the number of DEA-registered cannabis cultivators (there has been only one such cultivator for nearly 50 years). And the U.S. Food and Drug Administration (FDA) is reviewing a New Drug Application (NDA) submitted in October 2017 for what could be the first ever cannabis-derived pharmaceutical approved by the federal government.

The following chart shows three general areas of federal law that impact the cannabis industry—food and drug regulation, banking and finance, and intellectual property—as well as specific laws and federal policies related to each of the areas discussed later in this chapter.

Federal Laws and Policies Impacting the Cannabis Industry


Federal Laws and Policies Impacting the Cannabis Industry
DRUG AND FOOD REGULATION
BANKING AND FINANCE
INTELLECTUAL PROPERTY
Justice Department Cole Memo
Bank Secrecy Act and Financial Transaction Laws
Treasury Department FinCEN Memo
Securities Law
Bankruptcy Law
Internal Revenue Code
Trademark Act
Plant Variety Protection Act
Patent Act
Food, Drug, and Cosmetic Act
Agricultural Act of 2014
Rohrabacher-Blumenauer Amendment
Controlled Substances Act

Controlled Substances Act

The Controlled Substances Act (CSA) is a federal law enacted in 1970 that places strict legal controls on the manufacture, distribution, dispensing and possession of any controlled substance listed on one of five schedules established by the CSA. The CSA is enforced primarily by the U.S. Drug Enforcement Administration, an agency of the U.S. Department of Justice. A controlled substance may be manufactured, distributed or dispensed in accordance with the CSA only by a person properly registered with the DEA. Any person that manufactures, distributes, dispenses or otherwise possesses a controlled substance in violation of the CSA is subject to civil and criminal penalties.

The CSA schedules are numbered I to V. Schedule I substances are subject to the strictest controls, and Schedule V substances are subject to the least restrictive controls. A controlled substance is listed on a particular schedule according to four factors:

(i) The substance's potential for abuse.
(ii) Whether the substance has a currently accepted medical use in treatment in the United States.
(iii) Whether the substance is accepted as safe to use under medical supervision.
(iv) The degree of physical and psychological dependence that may result from abuse of the substance.

Upon enactment in 1970, the CSA assigned each controlled substance to a specific schedule. The U.S. Congress may legislate a controlled substance's addition to or removal from a CSA schedule. The CSA also provides a regulatory framework for a substance to be added to or removed from a schedule; such change generally involves a recommendation by the U.S. Department of Health and Human Services (DHHS) and concurrence with that recommendation by the DEA. The U.S. Food and Drug Administration, an agency of the DHHS, is charged with making certain safety-related determinations used in DHHS scheduling recommendations.

Schedule I controlled substances are those found by the U.S. Congress or the DEA and the DHHS to have a high potential for abuse, to have no currently accepted medical use in treatment in the United States and to have a lack of accepted safety for use under medical supervision. Current Schedule I substances include marijuana, THC, heroin, ecstasy, LSD and peyote. Unlike Schedule II through Schedule V controlled substances, which can be prescribed by a doctor, the CSA does not allow prescriptions to be written for Schedule I controlled substances.

Marijuana

Marijuana has been a Schedule I controlled substance since enactment of the CSA in 1970. The CSA defines "marijuana" as

> all parts of the plant *Cannabis sativa L.*, whether growing or not; the seeds thereof; the resin extracted from any part of such plant; and every compound, manufacture, salt, derivative, mixture, or preparation of such plant, its seeds or resin. Such term does not include the mature stalks of such plant, fiber produced from such stalks, oil or cake made from the seeds of such plant, any other compound, manufacture, salt, derivative, mixture, or preparation of such mature stalks (except the resin extracted therefrom), fiber, oil, or cake, or the sterilized seed of such plant which is incapable of germination.

The parts and derivatives of the cannabis plant that are excluded from the CSA definition of marijuana have industrial uses and generally contain little or no THC. Non-marijuana cannabis products—commonly known as hemp products—including rope, clothing, animal feed and soap, are not subject to control under the CSA. The CSA does not restrict such non-marijuana products from being imported into the United States. However, because the production of such non-marijuana products ordinarily involves possession of the entire cannabis plant, including parts deemed marijuana under the CSA, the CSA effectively prohibits such production in the United States without DEA registration.

Tetrahydrocannabinol (THC)

In addition to and separate from marijuana's listing on Schedule I, tetrahydrocannabinol[1] (THC) has been listed on Schedule I since the CSA's enactment in 1970. From 1970 until 2003, DEA regulations defined THC for purposes of its separate Schedule I listing as including only "synthetic equivalents" of the THC found in the cannabis plant. In 2003, the DEA purportedly amended this regulatory definition of THC to include both synthetic equivalents of THC and THC occurring naturally in the cannabis plant. In its 2004 holding in *Hemp Industries Association v. DEA,* the U.S. Court of Appeals for the Ninth Circuit enjoined DEA enforcement of this purported amendment and held that the THC listed separately from marijuana on Schedule I includes only synthetic THC and that any THC occurring naturally within the cannabis plant is controlled under the CSA only if it falls within the CSA definition of marijuana.

Penalties for CSA Violations

Federal penalties for violating CSA provisions regarding marijuana or THC include fines and imprisonment. CSA violations may also result in federal seizure of cash and other assets related to the violations. CSA penalties may apply to cannabis businesses that violate the CSA and also to individuals who own or operate such businesses based on attempt, accomplice, conspiracy and criminal enterprise provisions included in the CSA.

New DEA Registration Policy

For nearly 50 years, only one cannabis cultivation site in the United States has operated with the required DEA registration. The site is operated by the University of Mississippi under a contract with the National Institute on Drug Abuse to supply the country's entire stock of federally legal cannabis, which is used exclusively for research. In August 2016, the DEA announced a new policy designed to increase the number of DEA-registered cannabis cultivators and permit-registered cultivators to grow cannabis for privately funded commercial drug development projects. The DEA announcement acknowledged the increasing interest in conducting cannabis research related to commercial pursuits, and indicated that the best way to satisfy the increased demand was to increase the number of DEA-registered cultivators. The DEA has since accepted at least 25 applications for registration but has not issued any new registrations.

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[1] CSA Schedule I uses the plural form "tetrahydrocannabinols" to describe a category of substances that includes chemical derivatives and isomers. This report adopts the more commonly used singular form, "tetrahydrocannabinol."

U.S. Department of Justice: The Cole Memo

A memorandum published by the DOJ in August 2013 (Cole Memo) provides guidance to DOJ attorneys and federal law enforcement about prosecuting cannabis-related federal offenses. The Cole Memo asserts that marijuana is a dangerous drug, that illegal distribution of marijuana is a serious crime which provides revenue to criminal enterprises and that the DOJ is committed to enforcing marijuana-related violations of federal law. The Cole Memo also notes, however, that the DOJ is committed to using its limited investigative and prosecutorial resources to address the most significant threats in the most effective, consistent and rational way.

The Cole Memo guides DOJ attorneys and federal law enforcement to focus on the following eight enforcement priorities when considering prosecutions for marijuana-related CSA violations (and also, according to a Cole Memo update issued in February 2014, when considering prosecutions for marijuana-related violations of the federal money laundering statute, the unlicensed money transmitter statute and the Bank Secrecy Act):

1. Preventing distribution of marijuana to minors.
2. Preventing revenue from the sale of marijuana from going to criminal enterprises, gangs and cartels.
3. Preventing the diversion of marijuana from states where it is legal under state law in some form to other states.
4. Preventing state-authorized marijuana activity from being used as a cover or pretext for the trafficking of other illegal drugs or other illegal activity.
5. Preventing violence and the use of firearms in the cultivation and distribution of marijuana.
6. Preventing drugged driving and the exacerbation of other adverse public health consequences associated with marijuana use.
7. Preventing the growing of marijuana on public lands and the attendant public safety and environmental dangers posed by marijuana production on public lands.
8. Preventing marijuana possession or use on federal property.

The Cole Memo notes that whether marijuana-related conduct implicates any of these enforcement priorities should be a primary question in considering prosecution and that in states with legalized marijuana and effective regulatory systems, conduct in compliance with state law is less likely to threaten these priorities.

The Cole Memo has provided some comfort to those operating state-legal cannabis businesses that do not interfere with the enumerated enforcement priorities. However, the Cole Memo merely reflects internal guidance within the DOJ and does not create a legal defense for any violation of federal law.

During the January 2017 Senate confirmation hearings for current U.S. Attorney General Jeff Sessions, in a discussion about the enforcement priorities outlined in the Cole Memo, Mr. Sessions acknowledged the "problem of resources for the federal government" and stated that he thought some of the enforcement priorities were "truly valuable in evaluating cases," but he also stated that he would not commit to never enforcing federal law.

Rohrabacher-Farr Amendment

The Rohrabacher-Farr amendment, first passed by the U.S. Congress and signed into law by President Obama in 2014, prohibits the DOJ from using federal funds to prevent a state from "implementing" state laws that authorize the use, distribution, possession or cultivation of medical marijuana.

Following the amendment's initial 2014 enactment, the DOJ indicated that it did not plan to arrest state regulators for "implementing" a state's medical marijuana laws but would continue to prosecute individuals involved in state-law compliant medical marijuana activity because, in the DOJ's view, the amendment did not apply to prosecutions against individuals.

The DOJ's interpretation of the Rohrabacher-Farr amendment was rejected by a Ninth Circuit District Court in its 2015 ruling in *United States v. Marin Alliance for Medical Marijuana,* and again by the Ninth Circuit Court of Appeals in its 2016 ruling in *United States v. McIntosh.* The Ninth Circuit Court of Appeals held the Rohrabacher-Farr amendment prohibits DOJ from spending funds subject to the amendment on the prosecution of individuals who fully comply with state medical marijuana laws. The court noted a state's "implementation" of medical marijuana laws necessarily involves "giving practical effect" to those laws, and that DOJ prosecution of individuals complying with those laws prevents the state from giving the laws practical effect.

The Rohrabacher-Farr amendment generally applies only to DOJ funds made available pursuant to the federal budget legislation in which the amendment is included, and therefore must be renewed periodically with budget legislation to remain effective. The Rohrabacher-Farr amendment was recently renewed in December 2017 as part of an emergency aid package that remains effective until mid-January 2018. (With the retirement of Representative Samuel Farr from the U.S. Congress in 2016, the Rohrabacher-Farr amendment is now also referred to as the Rohrabacher-Blumenauer amendment; we use this name elsewhere in this report.)

Agricultural Act of 2014

The Agricultural Act of 2014 (Farm Bill) authorizes institutions of higher education and state departments of agriculture to cultivate industrial hemp, CSA controls notwithstanding, if (i) the industrial hemp is cultivated for purposes of research conducted under an agricultural pilot program or other agricultural or academic research and (ii) the cultivation is allowed under the laws of the state in which such institution of higher education or state department of agriculture is located and such research occurs.

The Farm Bill defines "industrial hemp" as the cannabis plant and any part of such plant, whether growing or not, with a THC concentration of not more than 0.3 percent on a dry weight basis. Industrial hemp, like any cannabis plant, may comprise both marijuana (as defined in the CSA) and non-marijuana. But the Farm Bill creates an exception to CSA controls on marijuana, so cultivation in accordance with the Farm Bill of marijuana that qualifies as industrial hemp does not violate the CSA.

The following table summarizes the legal relationship between marijuana (as defined in the CSA) and industrial hemp (as defined in the Farm Bill).

U.S. Legal Relationship between Marijuana and Industrial Hemp

	Marijuana	**Non-Marijuana**
	Cannabis plant and all parts and derivatives *except* non-marijuana	**Mature stalks; fiber made from mature stalks; oil or cake made from seeds; compounds, manufactures, salts, mixtures, preparations or derivatives of the foregoing parts and derivatives (*except* resin extracted from mature stalks); sterilized seeds**
Non-Industrial Hemp **Cannabis plant and all parts and derivatives *except* industrial hemp**	• Manufacture, distribution, dispensing and possession controlled under CSA • No Farm Bill exception to CSA	• No CSA controls • Farm Bill exception to CSA moot
Industrial Hemp **Cannabis plant and any part with THC concentration not more than 0.3% on a dry weight basis**	• Manufacture, distribution, dispensing and possession controlled under CSA (but subject to Farm Bill exception) • Farm Bill exception to CSA controls: state-legal cultivation by an institution of higher education or a state department of agriculture for research	• No CSA controls • Farm Bill exception to CSA moot

Industrial hemp can be used to produce CBD oil, an extract of the cannabis plant with a high concentration of cannabidiol (CBD) but little or no psychoactive THC. CBD oil is believed to have a range of medicinal benefits and therapeutic applications. Some have argued that the Farm Bill federally legalizes the production and sale of CBD oil. However, it is unclear whether CBD oil produced from industrial hemp is itself considered industrial hemp (the CSA defines marijuana by reference to the cannabis plant, parts of the plant and derivatives of the plant, whereas the Farm Bill exception to the CSA defines industrial hemp by reference only to the plant and parts of the plant, but does not mention derivatives). Even if CBD oil is considered industrial hemp and may be lawfully produced under the Farm Bill, only institutions of higher education and state departments of agriculture are authorized to produce it, and then only for purposes of agricultural or academic research; thus the Farm Bill likely does not create a CSA exception broad enough for large-scale commercial production and distribution of CBD oil within the United States.

Federal Food, Drug, and Cosmetic Act

The Federal Food, Drug, and Cosmetic Act (FD&C Act) is a federal law enacted in 1938 (and since amended multiple times) that authorizes the FDA to regulate the safety and effectiveness of drugs and medical devices and the safety of food, tobacco products and cosmetics. The FD&C Act prohibits the "adulteration or misbranding" of any drug, medical device, food, tobacco product or cosmetic (which the act generally refers to as "articles") in interstate commerce and prohibits interstate commerce in any such adulterated or misbranded article. The FD&C Act also prohibits the "introduction or delivery for introduction into interstate commerce" of any drug, medical device, food, tobacco product or cosmetic undertaken without the required FDA approval, permit or registration.

An article that includes cannabis or a cannabis derivative could conceivably qualify as a drug, medical device, food, tobacco product or cosmetic (or a combination). For example, a skin lubricant infused with cannabis extract and intended to relieve muscle pain may be both a cosmetic and a drug, and a prefilled device used to administer a metered dose of vaporized THC for treating nausea may be both a medical device and a drug. Industry dialogue regarding the FD&C Act and the FDA tends to focus on cannabinoid-based drugs and the potential for certain cannabis products to be regulated as food or a related category of products known as "dietary supplements," and we expand on both topics in the following discussion.

Drugs

Generally, the FD&C Act defines a "drug" as any one of the following:

(i) Any article recognized in the official U.S. Pharmacopoeia, U.S. Homeopathic Pharmacopoeia or National Formulary.
(ii) Any article intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease in humans or animals.
(iii) Any article (other than food) intended to affect the structure or any function of the body of humans or animals.
(iv) Any article intended as a component of any of the foregoing.

The FDA oversees the manufacturing of drugs by inspecting domestic and foreign manufacturing plants, by sampling drugs from retail stores, distribution warehouses and manufacturing plants and by evaluating complaints and reports of defects from consumers and health care professionals. The FD&C Act generally prohibits a company from introducing a drug into interstate commerce without the FDA having first approved the drug as safe and effective for treating a specified medical condition.

FDA approval of a drug as safe and effective for treating a specified medical condition generally involves the following steps:

(i) The drug's manufacturer performs laboratory and animal tests to determine how the drug works and whether it is safe enough to test on humans.
(ii) If the manufacturer determines the drug is safe enough to test on humans, then the manufacturer submits for FDA review an Investigational New Drug (IND) application.
(iii) Upon review of the IND application, if the FDA determines the drug is safe enough to test on humans, then the FDA approves the manufacturer to proceed with human clinical trials.
(iv) The manufacturer performs a series of human clinical trials and submits the resulting data for FDA review in the form of a New Drug Application (NDA). Upon review of the NDA, if the FDA determines the drug's benefits outweigh its known risks and the drug can be manufactured in a way that ensures a quality product, then the drug is approved as safe and effective for treating the specified medical condition.

A drug generally may not be marketed for treating a condition other than a condition for which the FDA has found the drug to be a safe and effective treatment; however, most FDA-approved drugs can be prescribed by doctors to treat other conditions (so-called "off-label" prescriptions).

Nonprescription or over-the-counter drugs can be marketed after receiving FDA approval through the NDA process or by conforming the drug to an existing over-the-counter "monograph" (a "recipe book" indicating acceptable ingredients, doses, formulations and labeling) established by the FDA.

Cannabinoid-Based Drugs

Several drugs containing synthetic cannabinoids or cannabinoid-like compounds have been approved by the FDA. Marinol, a drug comprised of dronabinol (a synthetic THC) encapsulated with sesame oil in a soft gelatin capsule, was approved by the FDA in 1985 for treatment of nausea and vomiting associated with cancer chemotherapy in patients who have failed to respond adequately to conventional antiemetic treatments. It was later approved, in 1992, for treatment of anorexia associated with weight loss in patients with AIDS. Syndros, a drug comprised of dronabinol in a liquid solution, was approved by the FDA in 2016 for treatment of the same symptoms for which Marinol was approved. Cesamet, a drug comprised of encapsulated nabilone (a synthetic cannabinoid similar to THC), was approved by the FDA in 1985 for treatment of nausea and vomiting associated with cancer chemotherapy in patients who have failed to respond adequately to conventional antiemetic treatments.

Each of the drugs Marinol, Syndros and Cesamet was placed on CSA Schedule II within one to two years after its initial FDA approval (Marinol and Syndros were rescheduled from Schedule I upon recommendation of the DHHS, and Cesamet's placement on Schedule II was its initial CSA classification). Schedule II through Schedule V substances can be prescribed by a doctor, but the CSA does not permit prescriptions for Schedule I substances, so removal of an FDA-approved drug from Schedule I is required before the drug can be prescribed legally.

The FDA has not approved any drug derived from the cannabis plant. However, two such drugs, Sativex and Epidiolex (both manufactured by U.K.-based GW Pharmaceuticals), have advanced through certain stages of the FDA approval process. Sativex is a mouth spray used for treatment of spasticity caused by multiple sclerosis; it includes THC and CBD derived from cannabis. Epidiolex is an oral formulation of cannabis-derived CBD intended to treat severe forms of childhood epilepsy. Human clinical trials have been conducted with both drugs, and although an NDA has not been submitted for Sativex, an NDA for Epidiolex was submitted to the FDA in October 2017. If approved by the FDA, Epidiolex would be the first FDA-approved pharmaceutical derived from cannabis.

Foods and Dietary Supplements

Generally, the FD&C Act defines "food" as (i) any article used for food or drink for humans or animals, (ii) chewing gum, and (iii) any article used as a component of any of the foregoing. The FD&C Act defines a "dietary supplement" generally as either (i) a product intended to supplement the diet that contains certain dietary ingredients (including vitamins, minerals, herbs, botanicals, amino acids, or other substances used by humans to supplement the diet by increasing the total dietary intake) or (ii) a product intended for ingestion in tablet, capsule, powder, softgel, gelcap, or liquid form and labeled as a dietary supplement but not represented for use as a conventional food or as a sole item of a meal or the diet. A dietary supplement generally is deemed to be a food under the FD&C Act.

The FD&C Act does not require foods or food labels to be pre-approved by the FDA, but it does give the FDA broad authority to regulate the safety of food and food labels and to prevent interstate commerce in adulterated or misbranded food. Facilities engaged in manufacturing, processing, packing or holding food for consumption in the United States are required to be registered with the FDA. The FD&C Act requires most foods to bear nutrition labeling and requires food labels that bear nutrient content claims and certain health messages to comply with specific requirements. The FDA is authorized to enforce safety and labeling regulations by conducting inspections, sampling, recalls and seizures, and by pursuing injunctions and criminal prosecutions.

Cannabis-Based Foods and Dietary Supplements

The FDA has published guidance (most recently updated in August 2017) concluding that (i) the FD&C Act does not permit foods to which THC or CBD have been added to be sold in interstate commerce and (ii) any product containing THC or CBD is not a dietary supplement. For this conclusion to be legally correct, based on the FD&C Act provisions cited by the FDA, it would need to be demonstrated that neither THC nor CBD were marketed in or as a food or as a dietary supplement before the occurrence of certain approvals and clinical investigations of drugs that include THC (e.g., Marinol) or CBD (e.g., Sativex or Epidiolex). The FDA publication does not demonstrate that neither THC nor CBD were marketed in or as a food or as a dietary supplement before such occurrences and merely states that the FDA is "not aware of any evidence that would call into question" its conclusion. The FDA's conclusion has not been subject to any legal challenge, and it remains unresolved whether certain cannabis-based products, particularly hemp-derived CBD products, might be regulated by the FDA as foods or dietary supplements rather than as drugs.

FDA Policy and Enforcement

In December 2016, the FDA published a document titled *Botanical Drug Development; Guidance for Industry* that discusses several areas in which, due to the unique nature of botanical drugs, the FDA believes it is appropriate to apply regulatory policies that differ from those applied to nonbotanical drugs. The guidance discusses challenges inherent to botanical drugs, including challenges related to ensuring therapeutic consistency, and suggests certain steps to address those challenges. The guidance was published only months after the DEA announced a new policy designed to increase the number of DEA-registered cannabis cultivators and permit-registered cultivators to grow cannabis for privately funded commercial drug development projects. These parallel developments indicate to some that the federal government is opening a pathway to federal approval of cannabis-derived drugs.

The FDA has the legal authority under the FD&C Act and related regulations to significantly disrupt the state-legal cannabis industry in the United States. The FDA has issued warning letters during the past several years to distributors of hemp-based CBD products but has not broadly enforced federal law against the cannabis industry. A cannabis-focused publication on the FDA website states that in deciding whether to initiate federal enforcement, the FDA may consult with its federal and state partners and consider many factors, including FDA resources and threats to public health. Beyond this statement, the FDA has not published detailed guidance about its cannabis-related enforcement priorities.

Bank Secrecy Act and Other Federal Laws Regarding Financial Transactions

Financial transactions in connection with cannabis-related CSA violations may implicate federal laws other than the CSA itself, including the federal money laundering statute, the federal unlicensed money transmitter statute and the Bank Secrecy Act (BSA).

The federal money laundering statute imposes penalties on any person who conducts or attempts certain financial or monetary transactions involving the proceeds of a "continuing criminal enterprise" (a term, used in the CSA, that arguably encompasses many cannabis businesses). Violations of the federal money laundering statute may result in fines equal to twice the value of the property involved in the transaction (or $500,000, if greater) and imprisonment for up to 20 years.

The federal unlicensed money transmitter statute makes it illegal for any person to operate or own a money transmitter business that involves the transportation or transmission of funds known to have been derived from or intended to promote or support criminal violations of the CSA. Violations of the law may result in fines and imprisonment for up to 5 years.

The BSA requires banks and other financial institutions to maintain certain records and to file certain reports deemed useful in criminal, tax or regulatory proceedings or in government intelligence and counterterrorism activities. Federal regulations under the BSA require financial institutions to file with the Financial Crimes Enforcement Network (FinCEN), a bureau of the U.S. Department of the Treasury charged with administering the BSA, a suspicious activity report (SAR) if the financial institution knows, suspects or has reason to suspect that a transaction conducted or attempted by, at or through the financial institution involves or is an attempt to disguise funds derived from illegal activity, is designed to evade BSA regulations or lacks an apparent lawful purpose. Financial institutions and their principals are subject to civil and criminal penalties for violations of the BSA.

U.S. Treasury Department: The FinCEN Memo

In coordination with the February 2014 Cole Memo update, FinCEN published a memorandum (FinCEN Memo) outlining how banks and other financial institutions can, consistent with their BSA obligations, provide services to marijuana-related businesses. The FinCEN Memo directs each financial institution to consider its own business objectives and the risks associated with offering a particular product or service when considering whether to commence or continue a customer relationship with a marijuana-related business. The memorandum emphasizes the importance of due diligence and outlines a procedure for filing SARs for such businesses.

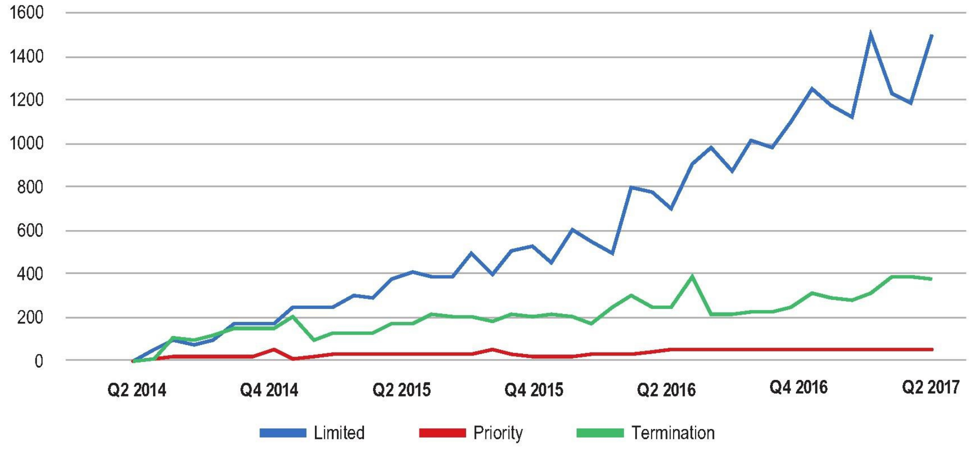
The FinCEN Memo guides financial institutions to conduct a due diligence review of a customer's business that includes an evaluation of whether the customer relationship implicates (or would implicate) any Cole Memo priority and also includes the following investigations:

1. Verifying with the appropriate state authorities whether the business is duly licensed and registered.
2. Reviewing the license application (and related documentation) submitted by the business for obtaining a state license to operate its marijuana-related business.
3. Requesting from state licensing and enforcement authorities available information about the business and related parties.
4. Developing an understanding of the normal and expected activity for the business, including the types of products to be sold and the type of customers to be served (for example, medical versus recreational customers).
5. Ongoing monitoring of publicly available sources for adverse information about the business and related parties.
6. Ongoing monitoring for suspicious activity, including for certain red flags described in the FinCEN Memo.
7. Refreshing information obtained as part of customer due diligence on a periodic basis and commensurate with the risk.

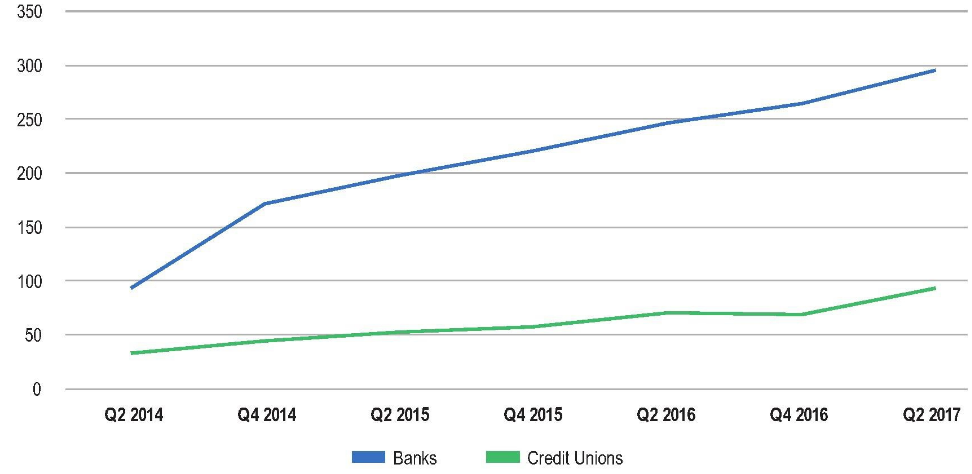
The FinCEN Memo also guides financial institutions to file various SARs with FinCEN regarding customers engaged in marijuana-related businesses. According to the memorandum, an institution should file (i) a “Marijuana Limited” SAR for each customer it believes does not violate state law or implicate any Cole Memo priority, (ii) a “Marijuana Priority” SAR for each customer it believes violates state law or implicates any Cole Memo priority, and (iii) a “Marijuana Termination” SAR if the institution decides to terminate a customer relationship in order to maintain an effective anti–money laundering compliance program. The FinCEN Memo outlines certain “red flags” that tend to indicate which type of SAR filing is appropriate; red flags include the inability of a customer to demonstrate compliance with state law or deposits of amounts of cash inconsistent with its tax returns.

FinCEN periodically publishes information about marijuana-related SAR filings made by depository institutions. From the February 2014 FinCEN Memo publication through June 30, 2017, FinCEN received a total of 33,692 marijuana-related SAR filings from a total of 390 banks and credit unions. The following graphs based on FinCEN data show the number of monthly Marijuana Limited, Marijuana Priority and Marijuana Termination SAR filings for this period and the number of banks and credit unions making such filings.

Monthly Marijuana-Related SAR Filings



Depository Institutions Making Marijuana-Related SAR Filings



Source: Financial Crimes Enforcement Network

The upward trend in the frequency of marijuana-related SAR filings, as well as the growing number of depository institutions making such filings, indicate cannabis businesses increasingly are accessing the federal banking system despite federal law.

The California State Treasurer's Cannabis Banking Working Group—a panel convened by California State Treasurer John Chiang that includes representatives from the cannabis industry and financial institutions, and government tax collection, law enforcement and regulatory agencies—issued a report in November 2017 on the cannabis industry's banking challenges. In the report, the State Treasurer's Office stated that the cannabis industry's lack of access to banking services is one of the biggest threats to the success of the state's recreational cannabis law, which is scheduled for implementation starting in January 2018. Based on the working group's findings, the State Treasurer's Office recommended the following four actions:

1. Implementation of safer, more effective, and scalable ways to handle the payment of taxes and fees in cash that minimize risks to stakeholders.
2. Development by the State of California and local governments of a data portal of compliance and regulatory data to be made available to financial institutions that bank cannabis businesses.
3. Conduct a feasibility study of a public bank or other state-backed financial institution that provides banking services to the cannabis industry.
4. Establish a multistate consortium of state government representatives and other stakeholders to pursue changes to federal law in order to remove the barriers to cannabis banking.

The State Treasurer's Office also stated it was apparent that a definitive solution to the cannabis banking quandary will remain elusive until the federal government removes cannabis from its official list of dangerous drugs or the U.S. Congress approves safe harbor legislation protecting financial institutions that serve cannabis businesses from federal penalties.

Federal Securities Law

The U.S. securities markets and industry participants are regulated principally under two federal laws: the Securities Act of 1933 (Securities Act) and the Securities Exchange Act of 1934 (Exchange Act). The Securities Act regulates the offer and sale of securities by issuers, and the Exchange Act regulates securities firms, stock exchanges, reporting by publicly traded companies and investing and trading practices of investors. The Exchange Act also establishes the Securities and Exchange Commission (SEC), a federal agency charged with enforcing federal securities laws.

Federal securities laws are intended to facilitate capital formation, maintain fair and efficient markets, and protect investors. The laws are based on a philosophy of disclosure: issuers of securities generally are obligated to completely and truthfully disclose material information to investors and the market, and failure to satisfy that obligation may result in civil or criminal penalties. Information generally required to be disclosed includes audited financial statements, discussions of risks applicable to the issuer and investors in its securities, and details of conflicts of interest faced by the issuer's officers and directors.

Federal securities laws related to private offerings provide fewer investor protections than laws related to public offerings and generally assume investors in private offerings can "fend for themselves." An issuer of securities in a private offering is not subject to the same extensive reporting requirements as publicly traded companies, but ordinarily will market its securities using a private placement memorandum (PPM) that includes information similar to some of the information required to be disclosed by publicly traded companies. An issuer in a private placement is subject to liability under federal securities laws for misrepresentation or fraudulent statements made in a PPM or otherwise in connection with the private offering.

By all indications, federal securities laws do not prohibit companies engaged in federally illegal cannabis activities from raising capital through the issuance of securities, nor do they prohibit industry participants like stock exchanges and investment banks from performing their ordinary market functions in connection with such companies. The SEC has allowed the registration and sale of securities offered by companies engaged in federally illegal cannabis activities and the trading of those securities on multiple U.S. stock markets. Although the SEC has on occasion suspended trading in some of these securities, those suspensions generally have been due to alleged violations of securities regulations rather than unlawful cannabis activities.

A cannabis company offering or selling securities must comply with federal securities laws—like any other issuer—by making required notice or registration filings and by providing truthful material information to investors. Any discussion of risks delivered to investors, whether required by securities laws or volunteered by the issuer as part of a private offering, should include a thorough discussion of the unique risks posed by operating a cannabis business engaged in federally illegal conduct. For an example of some of these risks, refer to Chapter IX, Cannabis Industry Risk Factors.

Federal Bankruptcy Law

Bankruptcy is a legal proceeding by which a debtor resolves its debt obligations and creditors are afforded certain rights in the debtor's assets in full or partial satisfaction of the debts owed to them. In the United States, bankruptcy is governed primarily by the Bankruptcy Reform Act of 1978 (Bankruptcy Code). Bankruptcy proceedings are conducted primarily by federal bankruptcy courts and generally involve administration of a debtor's assets either by a court-appointed trustee or by the debtor with approval and oversight of the court. Bankruptcy can be voluntary (initiated by the debtor) or involuntary (initiated by creditors). Bankruptcy provides certain rights and protections to the debtor and the creditors and is intended to fairly and finally resolve debts so the parties can pursue other affairs.

Debtors whose assets relate to federally illegal cannabis activity, as well as their creditors, generally are not eligible for bankruptcy protection for two reasons: First, federal courts refuse to appoint trustees to administer or take control of unlawful assets or business operations. Second, pursuant to an equitable doctrine known as "unclean hands," federal courts typically decline to honor creditor claims that arise from knowingly transacting with a debtor in furtherance of unlawful activity. A federal bankruptcy court in Arizona invoked both these reasons in its 2015 decision in *In Re Medpoint Management, LLC*; details of this case follow.

Medpoint Management, LLC (Medpoint) managed the cultivation and business operations of a state-legal Arizona medical cannabis dispensary. Medpoint defaulted under various loan and consulting agreements directly related to its dispensary activities, and the four creditors under those agreements filed a petition for involuntary bankruptcy. The bankruptcy court dismissed the petition, stating it would not assign a trustee "to administer drug tainted assets for the benefit of creditors who assumed the risk of doing business with an enterprise engaged in violations of federal law." Federal courts in California, Oregon, Colorado and Michigan have applied the same rationale to dismiss bankruptcy proceedings involving illegal cannabis-related assets.

State law alternatives to federal bankruptcy that may be available to cannabis businesses and their creditors include an assignment for the benefit of creditors (ABC) and receivership. An ABC is a state-law process for the orderly and controlled liquidation of a debtor's assets through a neutral, third party administrator. Receivership is a remedy whereby a court appoints a receiver to take possession of and protect property for the benefit of all concerned parties. In the state of Washington, for example, at least one medical cannabis business is reported to have successfully concluded a receivership process.

Internal Revenue Code

The Internal Revenue Code (IRC) defines gross income to include "all income from whatever source derived"; this definition has been interpreted by the Internal Revenue Service (IRS) and the U.S. Supreme Court to include income derived from unlawful activities. Consequently, cannabis businesses that violate the CSA and other federal laws related to cannabis nonetheless must file federal income tax returns and pay federal income tax.

A business generally computes its taxable income in two steps. First, the business computes its gross income by subtracting from its gross receipts the cost of goods sold (COGS), which includes the cost of acquiring, constructing or extracting a physical product that is to be sold. The subtraction of COGS to compute gross income is premised on constitutional grounds and cannot be changed by federal statutes or IRS regulations. Second, the IRC "allows" a business to deduct from gross income all ordinary and necessary business expenses, which generally include all business expenses other than COGS, such as employee salaries, payments to contractors, marketing costs, insurance premiums, and the cost of rent and utilities. But there are exceptions to this "allowed" deduction. One such exception is provided by IRC section 280E (Section 280E).

Section 280E disallows any deduction or credit for any amount paid or incurred in carrying on a "trade or business" that consists of unlawful "trafficking" in a Schedule I or Schedule II controlled substance. Although Section 280E does not prevent a cannabis business from subtracting COGS to compute gross income, it may prevent the deduction of all other business expenses for purposes of computing taxable income. As a result of Section 280E, businesses in the cannabis industry may have effective tax rates significantly higher than other businesses subject to federal income tax.

The scope of Section 280E, as it applies to U.S. cannabis businesses, is the subject of recent and ongoing federal court cases. The U.S. Tax Court has adopted the view (a view endorsed by the U.S. Supreme Court) that a "trade or business" is any activity entered into with the dominant hope and intent of realizing a profit, and it has indicated in multiple rulings that dispensing or buying and selling marijuana involves unlawful "trafficking" in a Schedule I controlled substance.

A trade or business that consists of unlawful cannabis trafficking may comprise a separate division of a single taxpayer, as was found by the U.S. Tax Court in its 2007 decision in *Californians Helping to Alleviate Medical Problems, Inc. v. Commissioner*, in which case Section 280E does not prevent the taxpayer from deducting business expenses attributable to other lawful trades or businesses it conducts. Or, all of a taxpayer's activities may constitute a single trade or business subject to 280E even though the taxpayer conducts some lawful business transactions not involving cannabis, as was found by the U.S. Court of Appeals for the Ninth Circuit in its 2017 decision in *Canna Care, Inc. v. Commissioner.*

Patent Act

Title 35 of the U.S. Code (Patent Act) is the federal statute that governs patents in the United States. A patent issued under the Patent Act is the right to exclude others in the United States from making, using, importing, offering for sale or selling an "invention or discovery" and, if the invention or discovery is a process, products made by that process. U.S. patents are issued by the U.S. Patent and Trademark Office (USPTO), a federal agency established by the Patent Act. A U.S. patent lasts from the date of issuance until 20 years after the date on which the application for the patent was filed with the USPTO. Patent Act remedies available to the holder of an infringed U.S. patent include damages, recovery of lost profits and recovery of legal fees.

"Inventions and discoveries" eligible for a patent under the Patent Act generally include any machine, manufacture, composition of matter, process, art or method, or any improvement thereto that is novel, useful and non-obvious. Newly developed plants, plant varieties, seeds, plant parts, plant genes or plant production processes are generally recognized as inventions or discoveries eligible for a U.S. patent if they satisfy certain criteria. The Patent Act also provides specifically for a "plant patent" that precludes others from asexually reproducing, selling or using a distinct and new variety of plant (other than a tuber) that has been invented or discovered and asexually reproduced.

The Patent Act does not expressly prohibit the issuance of U.S. patents for inventions or discoveries that are unlawful or designed to serve an unlawful purpose, and the USPTO has issued a range of cannabis-related patents. Cannabis-related inventions or discoveries for which the USPTO has issued a patent include a cannabis strain named "Ecuadorean Sativa" (U.S. Plant Patent 27,475), cannabis cultivation and processing methods (U.S. Patent 9,095,554), a vaporizer (U.S. Patent 9,220,294), THC-infused shea butter for topical application (U.S. Patent 8,425,954), a THC extraction method (U.S. Patent 6,365,416) and equipment and methods for biosynthetic production of cannabinoids (U.S. Patent 9,587,212). U.K.-based GW Pharmaceuticals holds multiple cannabis-related U.S. patents. And despite the federal government's position for purposes of the CSA that marijuana has no currently accepted medical use in treatment in the United States, the U.S. federal government itself holds a patent for methods of treating certain diseases with cannabinoids (U.S. Patent 6,630,507).

Plant Variety Protection Act

The Plant Variety Protection Act (PVPA) establishes certain legal protections (or "breeders' rights") for the breeder of a sexually reproduced or tuber-propagated plant variety that is new, distinct, uniform and stable within the meaning of the PVPA. A breeder who so develops such a plant variety and satisfies other PVPA requirements may apply for and receive a certificate of plant variety protection issued by the U.S. Department of Agriculture (USDA). Such a certificate establishes a breeder's right, for a period of time and subject to certain exceptions, to exclude others from selling the variety, offering it for sale, reproducing it, importing or exporting it, or using it in producing a hybrid or different variety. A breeder's rights under the certificate last for 20 years (25 years in the case of a protected tree or vine) from the certificate's issue date.

It is not clear whether the USDA has issued any certificate of plant variety protection for a cannabis variety. The USDA website provides a searchable database of certificates issued since February 2013, as well as a schedule of crop categories for which certificates have been issued. A search of these USDA materials indicated that no certificates for varieties of cannabis, marijuana or hemp have been issued. The PVPA defines "variety" as "a plant grouping within a single botanical taxon of the lowest known rank" with certain defining and distinguishing features. Given the disagreement among botanists regarding cannabis taxonomy noted in Chapter II, Cannabis Science 101, it may be challenging to demonstrate that a cannabis variety satisfies PVPA criteria for protection.

Trademark Act

A trademark is a word, name, symbol or device used by a person to identify and distinguish the person's goods or services from the goods and services of others and to indicate the source of the goods or services. Trademarks take many forms, including logos, slogans, symbols, colors and sounds. Under common law and through registration under state and federal statutes, a trademark owner can be afforded certain legal protections against unauthorized use of the trademark by others.

Trademark protection under federal law is provided primarily by the Trademark Act, also known as the Lanham Act, which provides for registration of trademarks with the USPTO. The holder of a federally registered trademark receives certain rights and protections under federal law, including the right to use the "®" symbol, evidence and nationwide notice of a claim of ownership, access to federal courts for dispute resolution, the ability to prevent importation of foreign goods that infringe on the trademark, and the right to recover certain statutory damages and attorneys' fees. Generally, federal registration is the most comprehensive trademark protection available in the United States.

Federal trademark registration requires "lawful" use of the trademark in commerce. Thus, trademarks used to identify, distinguish or indicate the source of cannabis or related products or services that are illegal under federal law are not eligible for federal registration. However, federal registration is available for trademarks used in connection with federally legal cannabis-related products or services, such as a recipe for food intended to be infused with cannabis or a cannabis-related clothing line.

Alternatives to federal trademark registration include protections available under common law and through registration under state trademark statutes. Common law protections vary across jurisdictions and generally extend only to geographical regions where a trademark has first been used in commerce. State trademark registration generally provides protection within the entire state but, like federal registration, may not be available for trademarks used in connection with unlawful subject matter.

The Path to Federal Legalization

We believe that cannabis will eventually become federally legal for recreational enjoyment by adults and for use in a broad range of safe drugs and therapeutic products. A wide gulf currently separates federal policy from state legalization initiatives. Both federal and state regulators lack experience with science-based regulation that allows cannabis access, but they approach this lack of experience differently. Current federal policy is slow-turning and bureaucratic; it requires rigorous scientific evidence that cannabis is safe and effective but largely prohibits the industry from developing that evidence. State legalization initiatives are experimental: they start by legalizing the cannabis industry, then task state regulators with implementing rules and safeguards as the industry builds its scientific foundation and its markets.

We believe that federal policy will move (and may already be moving) in a new direction which allows for federally approved cannabis-derived drugs. If that happens, and if several cannabis-derived drugs are federally approved, we expect the FDA and the DEA will have developed data and protocols that facilitate more rapid approval of medical cannabis products. And if that happens, these federal agencies should be able to combine their science-based regulatory practices with the best practices of state regulators to develop a comprehensive federal approach to medical and recreational cannabis.

DEA and FDA Policy Direction

The path to federal legalization begins with understanding that current federal law, in theory, allows for the production, distribution and prescription of medical cannabis products in the United States. The DEA can register manufacturers to produce medical cannabis products in accordance with the CSA. The FDA can approve medical cannabis products for distribution in accordance with the FD&C Act. The DEA (an agency of the DOJ) and the FDA (an agency of the DHHS) together can cause medical cannabis products to be rescheduled under the CSA so that doctors legally can prescribe them. None of these regulatory actions requires a change in law. Technically, cannabis is not entirely prohibited by federal law.

But in any practical sense, cannabis is federally prohibited. For nearly 50 years, the DEA has registered only one cannabis manufacturer. The FDA has never approved a cannabis-derived drug. Because marijuana remains a Schedule I controlled substance, the lone DEA-registered cannabis manufacturer can produce cannabis only for strictly controlled research, and doctors cannot prescribe any marijuana compound or derivative as medicine. A duo of federal regulatory agencies—not federal law—prohibits lawful access to medical cannabis products; this may be changing. The DEA and the FDA appear to be exploring policies and practices that could result in the actual production, distribution and prescription of cannabis-derived drugs.

In August 2016, the DEA announced a new policy designed to increase (beyond one) the number of DEA-registered cannabis cultivators and permit-registered cultivators to grow cannabis for privately funded commercial drug development projects. The DEA has since accepted at least 25 applications for registration but has not issued any new registrations. Some observers believe the new policy initiative has stalled under the leadership of the DOJ, currently run by U.S. Attorney General Sessions. However, that the DEA recognized and responded to the demand for expanded registration is a significant development on its own, and one that we believe may signal an important redirection of DEA policy.

In October 2017, the FDA accepted GW Pharmaceuticals' New Drug Application (NDA) for the cannabis-derived drug Epidiolex. The steps required to file an NDA for any drug involve extensive coordination and data sharing between the FDA and the applicant; submission of the Epidiolex NDA is an important milestone toward FDA approval. Many observers expect that Epidiolex will be the first cannabis-derived drug approved by the FDA.

Additionally, the FDA published industry guidance on botanical drug development in December 2016, several months after the DEA announced its new registration policy. The FDA guidance discusses challenges inherent to botanical drugs, including challenges related to ensuring therapeutic consistency, and suggests certain steps to address those challenges. The FDA guidance updates and replaces similar guidance last issued in June 2004, and we believe that the timing of this update may relate to other cannabis-related developments at the FDA and the DEA.

Federal Legalization: Predicted Developments

We predict six developments on the path to federal legalization: (1) the FDA will begin approving individual pharmaceutical-grade drugs derived from cannabis; (2) more states will adopt medical cannabis laws; (3) more states will adopt recreational laws; (4) the FDA will adopt routine approval procedures for drugs with extracts of low-THC/high-CBD cannabis varieties; (5) the FDA will adopt routine approval procedures for drugs with extracts of high-THC cannabis varieties; and (6) cannabis parts and derivatives will be removed from the CSA schedules (either incrementally, starting with CBD, or all at once) and will be fully legal for medical and recreational purposes.

We do not predict that these developments necessarily will occur in the order presented. We do expect some of them to develop in parallel, and none of them depends fundamentally on any other. The manner in which federal cannabis legalization actually proceeds, and the timing of any related developments, are not known to us or anyone else. Almost certainly, our predictions will prove inaccurate in some respects. States may reverse their legalization efforts. The medical efficacy of cannabis may not be proved to be significant. Cannabis may never be legalized federally. However, we believe these developments will likely be among others that lead to the federal legalization of cannabis. We expand on each of these developments in the following discussion.

Path to Federal Legalization

1. The U.S. Food and Drug Administration will begin approving individual pharmaceutical-grade drugs derived from cannabis.
2. More states will adopt medical cannabis laws.
3. More states will adopt recreational laws.
4. The FDA will adopt routine approval procedures for drugs with extracts of low-THC/high-CBD cannabis varieties.
5. The FDA will adopt routine approval procedures for drugs with extracts of high-THC cannabis varieties.
6. Cannabis parts and derivatives will be removed from the CSA schedules and will be fully legal for medical and recreational purposes.

(1) FDA Approves Cannabis-Derived Pharmaceuticals

The FDA will approve pharmaceutical-grade drugs derived from cannabis through the NDA process. FDA approval will require manufacturers to use cannabis varieties with particular chemical profiles and to demonstrate the ability to control the chemical consistency of those varieties during manufacturing. The DEA will place a narrow characterization of each FDA-approved drug on CSA Schedule II, III, IV or V, and will issue one or more registrations to manufacture the drug and the cannabis variety used to produce the drug. The FDA will improve and refine its botanical-drug review process in general and, in particular, as it relates to cannabis-derived drugs. The FDA, the DEA and DEA-registered cannabis researchers and manufacturers will cooperate to create a federal database of (i) each cannabis variety approved for use in producing an FDA-approved drug and (ii) the manufacturing controls required by the DEA and the FDA to cultivate chemically consistent plants of the variety in accordance with the CSA and the FDA's drug approval. We refer to each cannabis variety in this database, together with its required manufacturing controls, as an "FDA-registered chemovar" (a chemovar is a plant variety characterized by its chemical content).

(2) More States Adopt Medical Cannabis Laws

More states will adopt medical cannabis laws, and the number and nature of qualifying medical conditions included in such laws will expand. Scientific research will improve the ability of the state-legal medical cannabis industry to develop products that target specific medical conditions. Companies will increasingly seek to differentiate such medical product offerings from recreational cannabis products. State regulators and industry leaders will seek to standardize testing, labeling and quality control procedures particular to medical cannabis products and adopt cannabis-variety recognition and manufacturing practices consistent with those for FDA-registered chemovars.

(3) More States Adopt Recreational Laws

More states will adopt recreational laws, typically after medical cannabis has been legalized for some period of time. States will establish agencies to comprehensively regulate both recreational and medical cannabis; some regulatory standards will apply across both categories but, increasingly, regulations will develop specific to each category. State regulators will learn from the recreational cannabis experience of other states and will seek to standardize regulations that allow adults to responsibly enjoy cannabis while protecting the health and safety of the general public. Recreational cannabis regulations will resemble federal and state alcohol and tobacco regulations, addressing issues such as product potency and warning labels, and restrictions on advertising and packaging that appeal to minors.

(4) FDA Routinely Approves CBD Drugs

The FDA will adopt procedures for the routine approval of drugs that contain extracts of certain low-THC/high-CBD FDA-registered chemovars. The new procedures will involve development of a low-THC cannabis drug monograph that resembles in some ways the FDA monographs for over-the-counter drugs. The monograph will address formulation, dosing and labeling requirements. The FDA-registered chemovars included in the monograph will be rescheduled by the DEA to Schedule II, III, IV or V in order to relax DEA registration requirements for manufacturing; however, the chemovars themselves (particularly their flowers) will not be approved for use by the FDA, and only drugs produced from extracts in accordance with the monograph will receive routine FDA approval.

(5) FDA Routinely Approves THC Drugs

Relying on experience with the low-THC cannabis drug monograph and a growing database of FDA-registered chemovars, the FDA will adopt procedures for the routine approval of drugs that contain extracts of certain high-THC FDA-registered chemovars. The procedures will parallel in many ways those used in the low-THC monograph procedure, and likely will incorporate additional safeguards related to THC content. The FDA-registered chemovars included in the high-THC monograph will be rescheduled by the DEA, but cannabis flower from those rescheduled chemovars will not be approved for use by the FDA.

(6) Federal Government Legalizes Cannabis

Parts and derivatives of the cannabis plant will be removed from the CSA schedules. This could occur incrementally, starting with CBD (which could be removed by amending the definition of marijuana to exclude CBD) and followed later by the rest of the plant (including THC). Or all parts and derivatives of the plant could be de-scheduled at the same time. There will be three general categories of legal cannabis products: (i) FDA-approved drugs, which will continue to be developed and approved through the NDA and other processes; (ii) "therapeutic" cannabis products, which may be limited to CBD concentrates and infused products if CBD is de-scheduled first, but which eventually will include smokable flower (including high-THC flower) and most forms of cannabis, and which will be permitted to make limited health-related claims but will not be approved by the FDA as safe and effective for treating any specified medical condition; and (iii) recreational products, which also may be limited to CBD products initially, but which eventually will include a broad range of high-THC flower, concentrates and infused products. The DEA will still require registration of cannabis and CBD manufacturers if CBD is de-scheduled first, but once the entire cannabis plant is de-scheduled, a new federal cannabis agency will be established to regulate medical and recreational cannabis in cooperation with the FDA and state regulators. The new agency will adopt the DEA's institutional framework for controlling the manufacture of chemovars used in FDA-approved drugs and the most successful state strategies for regulating recreational cannabis, such as potency limits, labeling requirements and restrictions on marketing to minors.

Outlook

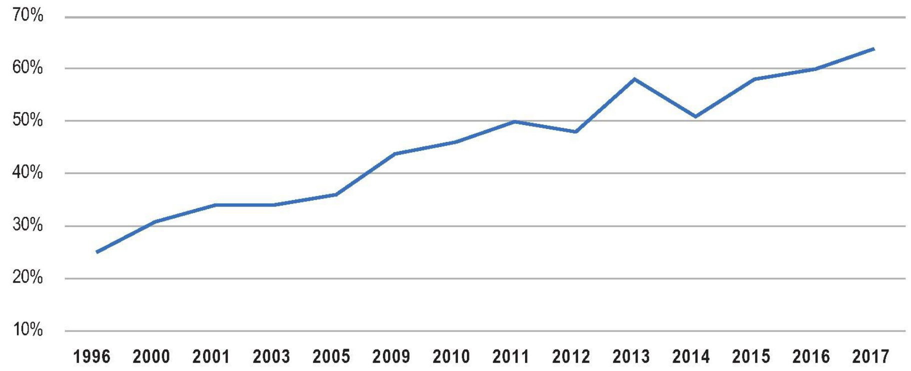
Development (1) does not require any change in federal law or radical departure from prior federal policy, but merely requires a redirection of FDA and DEA policies and practices. Developments (2) and (3) also do not require a fundamental change in federal law. In this sense, developments (1)–(3) largely reflect incremental developments within the existing legal environment. For example, eight state legislatures are expected in 2018 to introduce ballot measures or explore regulatory frameworks for recreational cannabis (Arizona, Delaware, Florida, Michigan, New Jersey, Ohio, Rhode Island and Vermont). Three other states (Missouri, Oklahoma and Wyoming) are expected to enact medical cannabis laws in 2018. And as discussed previously, many observers expect that in 2018, the FDA will approve a cannabis-derived pharmaceutical for the first time.

Developments (4)–(6) require more fundamental changes in federal laws and policies. We do not expect developments (4), (5) or (6) to occur during the current presidential term, but we believe that there is a reasonable chance development (4) could begin within the next five years and development (5) could occur within two years thereafter. In total, we believe it could take up to 10 years or more before the federal legalization process reaches development (6) and cannabis becomes fully legal under federal law.

We believe that cannabis will become federally legal when American voters demand it. Developments (1)–(5) are not required precursors to federal legalization, and either the U.S. Congress or the DEA could initiate development (6) at any time. We believe that either the Congress or the DEA is more likely to take such a step in an environment where developments (1)–(5) have progressed, but there are signs that pressure from American voters may be mounting for the federal government to act more quickly.

According to Gallup, the percentage of Americans who support legalization of cannabis use has increased significantly over the past two decades, and 64% of Americans today believe cannabis use should be legal. We expect that, eventually, federal policy will align with the attitudes of a majority of American voters. The following graph shows the percentage of Americans who answered "Yes" to Gallup when asked whether use of marijuana should be made legal.

U.S. Public Support for Legalizing Cannabis Use



Source: Gallup. Data is shown for each year that such data was provided by Gallup since 1995.

CHAPTER V

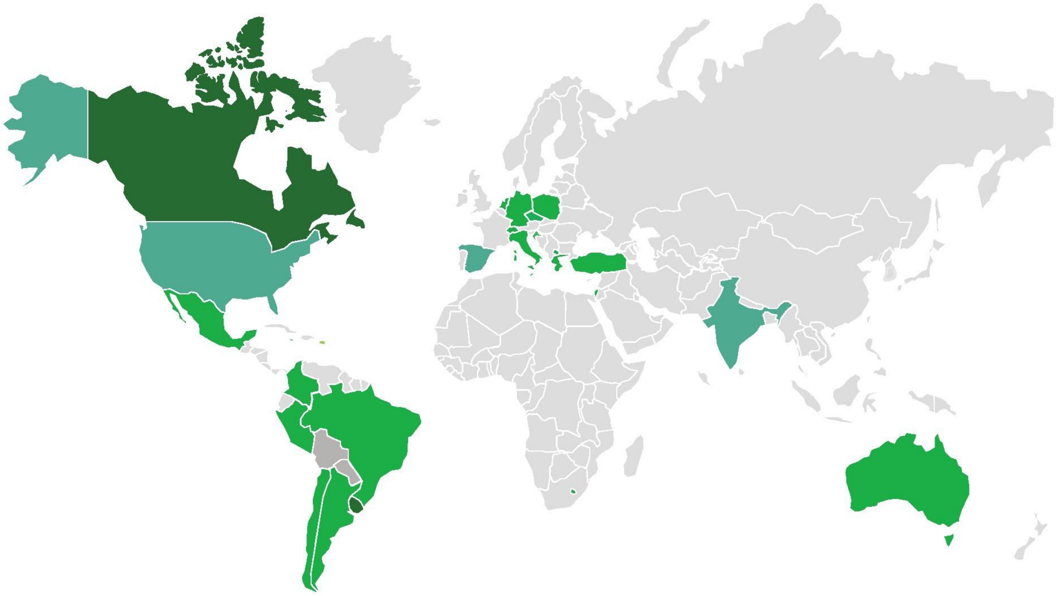
Global Cannabis Regulation

Global Cannabis Legalization Momentum

Cannabis legalization is gaining momentum around the world, offering global opportunities for cannabis companies and related businesses. This momentum is driven primarily by the increasing recognition that cannabis may have a range of legitimate medicinal benefits and therapeutic applications. At least 20 countries now have medical laws that facilitate patient access to cannabis or concentrates for treating specified medical conditions. Notable countries with such medical laws include Australia, Canada, Colombia and Germany; countries without such laws include China, Japan, Russia and the United States. (Contrary to U.S. federal law, 29 states, encompassing 62% of the U.S. population, permit the production and possession of cannabis or concentrates for use in treating a broad range of qualifying medical conditions.) While the merits of medical cannabis are currently driving legalization, we believe that—like Uruguay and numerous U.S. states—other countries will ultimately enact legislation permitting the production, sale and use of recreational cannabis. (Canada is widely expected to do so in mid-2018.)

The following world map illustrates select countries that (i) have enacted medical laws that facilitate patient access to cannabis or concentrates for treating specified medical conditions, (ii) have enacted recreational laws that permit the commercial production and sale of cannabis to adults for recreational and other uses, or (iii) include a state or province that has a cannabis law or policy in conflict with federal law.

Select Countries with Legalized Cannabis Access (January 2018)



🟩 **Medical Law**

Argentina
Australia
Brazil
Chile
Colombia
Croatia
Czech Republic
Germany
Greece
Israel
Italy
Jamaica
Lesotho
Macedonia
Mexico
Netherlands
Peru
Poland
Switzerland
Turkey

🟩 **Recreational Law**

Canada[1]
Uruguay[2]

🟩 **State/Province Conflict with Federal Law**

India
Spain
United States

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[1] Canada currently has a medical law. Assumes Canada enacts a proposed recreational law in mid-2018.

[2] Uruguay has both a medical law and a recreational law.

International partnerships and business plans are being formed as countries increasingly allow importation and exportation of cannabis products and more companies recognize the global potential of the cannabis industry. Canadian companies are cultivating cannabis in South America and supplying markets in Europe, Australian companies are forming research partnerships with producers in Israel, and European companies are securing cannabis-related patents in the United States. And, as discussed in more detail in Chapter VII, Capital Markets for Cannabis Companies, more cross-border investment activity is taking place as industry participants position for the expected further opening of global cannabis markets.

Despite the growing recognition of the potential medical value of cannabis, the current legalization momentum and the increasingly international scope of cannabis business, the movement of products and flow of capital required for a truly global industry continue to be inhibited by incongruous laws, regulations and international treaties. For example, concerns about violating U.S. federal banking and anti–money laundering regulations have caused certain U.S. banks to refuse to be connected to the cannabis industry, avoiding even indirect association with cannabis activity that is legal where conducted. In one instance, a number of U.S. banks threatened to cease business with certain Uruguayan banks that serviced pharmacies legally distributing recreational cannabis within Uruguay. In turn, those Uruguayan banks effectively forced the pharmacies to stop participating in Uruguay's cannabis market. (In a similar way, lack of access to the U.S. federal banking system continues to inhibit growth of the domestic cannabis industry.) Until the largest economies in the world more fully embrace cannabis, we must stop short of calling cannabis a truly global industry. However, we believe that the legalization momentum will continue worldwide.

United Nations Conventions

International regulation of cannabis, cannabis derivatives and many other narcotic, psychotropic and similar substances is addressed primarily by three international treaties (Conventions) adopted through the United Nations (UN) between 1961 and 1988.

The Single Convention on Narcotic Drugs of 1961 (1961 Convention) addresses regulation of the cannabis plant, the coca flower and the opium poppy; certain of their derivatives (such as hashish, cocaine and heroin, respectively); and any other substance found in accordance with the 1961 Convention to be "liable to similar abuse and productive of similar ill effects." The 1961 Convention establishes four schedules of substances subject to increasingly strict controls in the following order: Schedule III, Schedule II, Schedule I and Schedule IV. Schedule IV substances (the most strictly controlled) are those Schedule I substances found to be particularly liable to abuse and to produce ill effects and for which such liability is not offset by substantial therapeutic advantages. Cannabis, cannabis resin, and extracts and tinctures of cannabis are included on Schedule I; cannabis and cannabis resin are also included on Schedule IV.

The Convention on Psychotropic Substances of 1971 (1971 Convention) addresses regulation of certain "psychotropic" substances, which the Convention recognizes generally as substances that may stimulate or depress the central nervous system causing "hallucinations or disturbances in motor function or thinking or behaviour [sic] or perception or mood," that may produce "a state of dependence" and that are subject to abuse "so as to constitute a public health and social problem warranting the placing of the substance under international control." Substances addressed by the 1971 Convention include THC, barbiturates, amphetamines and psychedelics such as LSD. The 1971 Convention establishes four schedules of substances subject to increasingly strict controls in the following order: Schedule IV, Schedule III, Schedule II and Schedule I. Schedule I includes THC and certain of its isomers and stereochemical variants. Schedule II includes dronabinol (a synthetic THC) and its stereochemical variants.

The United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 (Traffic Convention) establishes additional tools for enforcing provisions of the 1961 and 1971 Conventions. The Traffic Convention provides for international cooperation in arresting and prosecuting illicit traffickers of substances scheduled under the 1961 and 1971 Conventions and in disrupting their financial and distribution networks through extradition, anti–money laundering practices, asset forfeiture and other methods.

Generally, the Conventions contemplate that the manufacture, export, import, distribution, use and possession of scheduled substances should be allowed only for medical and scientific purposes under legal authority and that penalties, including criminal penalties, should apply to those who engage in such activities for other purposes or outside legal authority. Countries participating in the Conventions are generally required to enact laws and regulations that carry out the provisions of the Conventions, which may require them to establish dedicated regulatory agencies, track and report physical inventories as well as production and revenue data, implement and enforce labeling requirements and quality control procedures, restrict use of substances to those holding medical prescriptions and impose criminal penalties for violations. Currently, more than 180 countries are party to each Convention.

Amending schedules under the 1961 and 1971 Conventions generally involves participation of three UN-related bodies: (1) the Economic and Social Council (ECOSOC), one of the six main organs of the UN established under the UN charter in 1945; (2) the Commission on Narcotic Drugs (CND), itself a subsidiary body of the ECOSOC that assists the ECOSOC in supervising the application of international drug control treaties; and (3) the World Health Organization (WHO), an autonomous intergovernmental organization that collaborates with the UN and other organizations on global health matters. A schedule amendment may be initiated by the WHO or by any country participating in the applicable Convention, and generally requires approval of the CND, which approval may be subject to further review and approval by the ECOSOC. Notably, because regulations applicable to cannabis and certain derivatives are included in the body of the 1961 Convention (and not just in its schedules), merely removing cannabis and its derivatives from the schedules under the 1961 Convention would not entirely remove cannabis from that Convention's regulatory framework.

Recent Developments Related to the UN Conventions

Global support for the prohibitionist policies of the Conventions is waning, and a growing chorus of world leaders is calling for new policies for cannabis and other substances to be based on public health concerns rather than criminalization.

In 2012, the presidents of Colombia, Guatemala and Mexico requested the UN to focus its next special session on drugs on policy reform rather than on a mere progress review and continuation of the same policies. In 2014, the Global Commission on Drug Policy—represented by former UN Secretary-General Kofi Annan and the former presidents of Brazil, Chile, Colombia, Mexico, Poland, Portugal and Switzerland—called for an end to the criminalization of drug use and possession and for the responsible legal regulation of psychoactive substances.

A UN General Assembly Special Session (UNGASS) on drugs was originally scheduled for 2019, but was accelerated to April 2016 as a result of a proposal sponsored by Mexico and cosponsored by 95 other countries. The general assembly is the primary policy body of the United Nations, and one in which all UN member states have equal representation. Given this broad representation and the growing support for decriminalization, many expected the 2016 UNGASS on drugs to result in significant changes in policy. In an open letter delivered to UN Secretary-General Ban Ki-moon on the eve of the session, former presidents or prime ministers of Brazil, Cape Verde, Chile, Colombia, Greece, Hungary, Mexico, the Netherlands, Nigeria, Poland and Switzerland joined with high-profile scholars, celebrities, clergy, business leaders, elected officials and others in pressing the Secretary-General to call for reform of prohibitionist drug control policies. Those supporting reform were disappointed when the UN General Assembly adopted a resolution reaffirming its "commitment to the goals and objectives" of the three Conventions.

Despite the lack of an immediate and fundamental shift away from the prohibitionist policies of the Conventions, other steps are being taken that may result in relaxed cannabis controls within the existing Conventions framework. A committee of the WHO tasked with making drug control recommendations to the CND on behalf of the WHO—the Expert Committee on Drug Dependence (ECDD)—recognized an increase in medical cannabis use and the emergence of cannabis-related pharmaceuticals, and in November 2016 requested that the WHO prepare "pre-review" materials for cannabis, for the specific cannabis derivatives scheduled under the 1961 and 1971 Conventions, and for cannabidiol, or CBD. These pre-review materials are preliminary analyses considered by the ECDD to determine if more in-depth "critical reviews" should be undertaken by the ECDD.

The WHO presented the requested CBD pre-review materials at a November 2017 ECDD meeting. The CBD materials indicate that CBD exhibits no effects indicative of any abuse or dependence potential in humans, and that there is no evidence of any public health–related problems associated with the use of pure CBD. The outstanding pre-reviews related to cannabis and specific derivatives are expected in early 2018. The ECDD recommended that the pre-review materials be evaluated at a specific cannabis-focused ECDD meeting to be held no later than June 2018. The requested pre-reviews represent the first ever scientific guidance on cannabis to be issued within the framework of the Conventions. If the pre-reviews lead to critical reviews, such reviews could ultimately result in a WHO-initiated rescheduling of substances under the 1961 and 1971 Conventions.

■ Global Legal Developments

Nations around the world have recently passed or are considering enacting an array of measures decriminalizing cannabis, legalizing it for medical use or, in a few cases, legalizing it for recreational use in contravention of the UN Conventions. The following discussion summarizes recent legal developments related to cannabis across different regions.

United States

Despite marijuana and THC being Schedule I controlled substances under the CSA—which, practically speaking, makes almost all manufacture, distribution, dispensing and possession of cannabis in the United States a federal crime—29 U.S. states and the District of Columbia have enacted medical cannabis laws that permit the production and possession of cannabis or concentrates for use in treating a broad range of qualifying medical conditions, and 8 of those same states have enacted recreational laws that permit the commercial production and sale of cannabis to adults for recreational and other uses. And 19 U.S. states (including 2 with medical cannabis laws) have passed narrow CBD/limited laws that permit possession of small amounts of low-THC/high-CBD cannabis concentrates for use in treating a few serious medical conditions—in particular, severe forms of childhood epilepsy. A majority of Americans now live in states that permit the production and possession of cannabis or concentrates for use in treating a broad range of qualifying medical conditions, and polls show that a majority of Americans believe cannabis use should be legal. For a more thorough discussion of U.S. state and federal law, see Chapter IV, U.S. Legal Landscape.

Canada

Canada's Controlled Drugs and Substances Act (CDSA) was enacted in 1996 and currently serves as the country's implementing legislation under the UN Conventions. The CDSA establishes eight schedules of "controlled substances" and imposes civil and criminal penalties for production, trafficking, importing, exporting and possession of those controlled substances in violation of the CDSA. Cannabis, cannabis preparations and derivatives, and certain cannabinoids, including THC and CBD, are Schedule II substances under the CDSA. Those who commit CDSA violations related to Schedule II substances are subject to fines and imprisonment.

In a 2000 decision by the Court of Appeal for Ontario, the court held that certain criminal prohibitions under the CDSA related to cannabis were unconstitutional because they did not include a constitutionally acceptable medical exemption. Following this constitutional holding and acting within the framework of the CDSA, which allows for the issuance of regulations and exemptions thereunder, Canada issued a sequence of three medical marijuana regulations discussed below.

The Marihuana [sic] Medical Access Regulations (MMAR), issued in 2001, permitted individuals with the authorization of their health care practitioners to grow their own cannabis plants for medical purposes, to designate someone to grow cannabis for them or to purchase dry cannabis flower from Health Canada (the government agency charged with administering Canada's medical cannabis regulations). The MMAR was successfully challenged on constitutional grounds and eventually replaced in 2013 by the Marihuana [sic] Medical Program Regulations (MMPR). The MMPR created a regulatory framework under which individuals with a medical need could obtain dry cannabis flower from licensed commercial producers. Like the MMAR before it, the MMPR was held unconstitutional and was eventually replaced, this time in August 2016, by the currently effective Access to Cannabis for Medical Purposes Regulations (ACMPR).

The ACMPR permits businesses licensed by Health Canada to commercially produce and distribute cannabis flower, cannabis oil and cannabis starter materials, such as plants and seeds, to individuals with a medical recommendation from an authorized health care practitioner. The ACMPR also allows such individuals to produce a limited amount of cannabis for their own medical purposes, or to designate another person (which may include Health Canada) to produce it for them. The ACMPR sets forth a comprehensive licensing and regulatory regime that addresses security of licensed production facilities, import and export permits, quality control measures and labeling requirements, and imposes limits on the amount of cannabis that can be produced and possessed by an individual.

In April 2017, a proposed recreational law was introduced in the Canadian parliament; this legislation would allow adults to purchase cannabis from federally licensed producers and to possess and share cannabis with other adults. The proposed Cannabis Act would authorize the Canadian government to issue regulations for the administration and enforcement of the act and to issue licenses and permits authorizing the importation, exportation, production, testing, packaging, labeling, sending, delivery, transportation, sale, possession or disposal of cannabis and cannabis products. The Cannabis Act would authorize Canadian provinces and territories to regulate the distribution and retail sale of cannabis within their jurisdictions, and all individuals and entities, including federally licensed businesses, would be required to comply with those local regulations as well as federal laws.

Unlike the ACMPR, which is a set of medical cannabis regulations issued within the framework of Canada's CDSA, the Cannabis Act would amend the CDSA and related criminal and other statutes to facilitate the recreational law in Canada. The proposed Cannabis Act is widely expected to be approved in some form by the Canadian parliament by mid-2018. If approved, Canada would be the largest country in the world to legalize recreational cannabis on a national level.

Latin America and the Caribbean

During the past five years, Latin American and Caribbean nations (and Puerto Rico, a U.S. territory) have taken significant legal measures that increase access to cannabis for medical purposes, permit recreational cannabis use and relax criminal prohibitions.

In 2013, Uruguay became the first nation in the world to legalize and regulate the commercial production and sale of cannabis to adults for recreational and other uses. The Uruguayan law authorizes licensed producers to grow cannabis for sale, through licensed pharmacies, to Uruguayan citizens and permanent residents who have registered with the government; the law also permits individuals to grow up to six cannabis plants per year and to form small clubs that may grow up to 99 plants per year. Cannabis sales through licensed pharmacies commenced in 2017.

In 2015, Colombia approved a legal framework for the cultivation, processing and sale of cannabis extracts and related products for scientific and medical purposes. The Colombian framework provides for the issuance of separate licenses for cultivation and processing. It also contemplates that permits will be available under Colombia's export laws for the export of lawful cannabis products to jurisdictions where importation is legal. Colombia issued the first processing license in 2016 and the first cultivation license in 2017.

In 2017, Argentina enacted regulations permitting the use of cannabis oil and other derivatives either by qualifying patients or for scientific and medical research. Under the new legislation, the government will oversee cultivation and production of cannabis and its derivatives for research purposes and for patient consumption, establish a national registry of qualifying patients and make cannabis products available to those patients, free of charge. The government expects to import cannabis supplies until they can be produced domestically.

Other Latin American nations that have taken recent steps to increase medical cannabis access include Chile, Brazil, Mexico and Peru. In 2015, Chile changed its laws to allow medical cannabis use by patients and to authorize the sale of cannabis-based medicines through pharmacies. In 2016, Brazil approved a resolution authorizing the prescription and importation of cannabis products, including THC and CBD, for use in treating certain qualifying medical conditions. In June 2017, Mexico enacted a law directing its Ministry of Health to prepare regulations for the research, production and medicinal use of "pharmacological derivatives" of cannabis. In November 2017, Peru adopted a bill legalizing the production, commercialization and importation of cannabis oil to be used for medical purposes.

In the Caribbean region, Puerto Rico, the Cayman Islands and Jamaica have taken measures to decriminalize cannabis or increase access for medical use. In 2015, the governor of Puerto Rico signed an executive order that legalized use of cannabis derivatives (but not cannabis flower) for medical purposes. Jamaica passed a law in 2015 that decriminalizes possession of small amounts of cannabis, permits an individual to cultivate no more than five cannabis plants, establishes a medical cannabis regulatory agency and allows tourists with foreign medical cannabis prescriptions to purchase small amounts of cannabis. A 2016 law enacted in the Cayman Islands legalized the use of cannabis extracts for medical purposes and authorized the creation of import regulations and the sale through licensed pharmacies.

Australia and New Zealand

Australia amended its Narcotic Drugs Act in 2016 to authorize a regulated medical cannabis industry in the country. The amendment establishes licenses to cultivate cannabis, produce cannabis resin and other products for medicinal purposes, manufacture medicinal cannabis products and conduct cannabis research. A license-holder is required to secure a permit that places conditions on the license and identifies specific activities allowed within the scope of the license. Cannabis products for medicinal use that are either legally manufactured in Australia or legally imported can be prescribed to qualifying medical patients. The amendment defines medicinal cannabis products broadly as a product that includes, or is produced from, any part of the cannabis plant and is intended for the purpose of "curing, or alleviating the symptoms of a disease, ailment or injury."

New Zealand's Misuse of Drugs Act generally makes the importation, cultivation, distribution, possession and use of cannabis illegal. However, in September 2017, New Zealand's Health Ministry lifted certain restrictions so that doctors may now prescribe approved CBD products. (Previously, patients in need of CBD products were required to apply directly to the Health Ministry, and approval was granted on a case-by-case basis.) In December 2017, New Zealand introduced legislation for a medical law that would amend the Misuse of Drugs Act to permit domestic production of medical cannabis products and their use by people with terminal illness or chronic pain.

Europe

The European Union provides no coordinated legal framework for cannabis and, historically, European countries generally have prohibited its production and sale, but have also decriminalized or tolerated possession of small amounts.

In some European countries, personal use exceptions to criminal prosecution have been used to carve out visible distribution models. In the Netherlands, for example, Amsterdam is famous for its coffee-shop cannabis sales, even though the suppliers of cannabis to those coffee shops generally operate illegally. And in Spain, despite a federal prohibition on the sale of cannabis, court decisions and laws permitting cultivation for personal consumption have served to justify the country's hundreds of private cannabis clubs.

To date, no European country has implemented a recreational law comparable to those in Uruguay and some U.S. states and expected in Canada. However, starting with the Netherlands in 2003, a number of European countries have enacted medical laws that facilitate patient access to cannabis or concentrates, through importation or domestic production, for treating specified medical conditions.

Italy has allowed medical cannabis use since 2013 under a law that requires cannabis to be sold through authorized pharmacies to patients with a valid prescription.

Croatia legalized the limited use of medical cannabis products in 2015. Under the law, doctors may prescribe cannabis ointments, teas and other extracts to patients with a qualifying health condition, including tumors, AIDS, multiple sclerosis and child epilepsy. Smoking or vaporizing cannabis flower is not allowed under the law. In 2016, Croatia received a shipment of medical cannabis products from a Canadian producer, marking the first time a North American company legally shipped cannabis products containing THC and CBD into the European Union.

A German law that took effect in 2017 legalizes the use of medical cannabis products prescribed for patients with serious illnesses, including multiple sclerosis, chronic pain, epilepsy and chemotherapy-induced nausea and lack of appetite. The law provides a framework for the regulation of suppliers under which the government has already issued import licenses to Canadian and Dutch firms and is finalizing an approval process for the issuance of domestic production licenses.

A 2017 Polish law permits patients to obtain medical cannabis products, including flower, extracts and tinctures, through pharmacies if they have both a physician's medical authorization and permission from a regional pharmaceutical inspector. The qualifying conditions eligible for medical cannabis include chronic pain, chemotherapy-induced nausea, multiple sclerosis, spasticity and treatment-resistant epilepsy. Cannabis products must be imported into Poland because the law does not permit cannabis cultivation within the country.

Greece announced in 2017 that the use of cannabis extracts would be permitted for patients who obtain a doctor's recommendation and are diagnosed with chronic pain, neuropathic pain, chemotherapy-induced nausea, certain eating disorders and cancer.

In the United Kingdom, the Misuse of Drugs Act 1971 (Drugs Act) generally prohibits the manufacture, supply and possession of any "controlled drug," including cannabis and cannabis resin, without a license issued by the Home Office, a ministerial department of the U.K. government. There is no exception to this general Drugs Act prohibition that would facilitate patient access to cannabis or concentrates for treating specified medical conditions. However, within the Drugs Act framework, the Home Office has issued to U.K.-based GW Pharmaceuticals licenses to cultivate, possess and supply cannabis for medical research and for commercial purposes. GW Pharmaceuticals produces Sativex, a mouth spray that contains cannabis-derived THC and CBD and is used for treatment of spasticity caused by multiple sclerosis. Sativex is generally recognized as the first prescription drug in the world to include plant-based cannabinoids. It was first approved for use in the U.K. in 2010 and has been approved for use in at least 30 countries (but not in the United States).

Middle East, Asia and Africa

Throughout the Middle East, Asia and Africa, cannabis cultivation, sale and possession generally remain prohibited and punishable as criminal offenses. Only a handful of countries from these regions have enacted laws that decriminalize possession of small amounts of cannabis for personal use or facilitate patient access to cannabis or concentrates for treating specified medical conditions.

In 2017, particular sections of South Africa's Drugs and Drug Trafficking Act, which prohibit cultivation, possession and personal use of cannabis on private property, were declared unconstitutional. During the same year, Lesotho (an enclave surrounded entirely by South Africa) granted a license to a pharmaceutical company to grow, process and sell cannabis for medicinal use or scientific purposes.

In Israel, the country's Dangerous Drug Ordinance generally criminalizes the manufacture, possession and use of cannabis. However, medical cannabis in smokable and other forms has been legal since the 1990s for patients with a range of serious medical conditions, including multiple sclerosis, Crohn's disease, cancer and post-traumatic stress disorder, and the country is widely recognized as a global leader in medical cannabis research and cultivation. Under Israel's medical cannabis rules, the Ministry of Health can issue permits for the production, distribution and use of medical cannabis products. Patients must first obtain a doctor's recommendation and submit it to the ministry in order to receive a medical cannabis use permit. In August 2017, the Israeli Ministries of Health and Finance announced that licensed producers and distributors of medical cannabis would become eligible, for the first time, for permits to export medical cannabis to jurisdictions where it is legal to import.

Global Outlook

While the medical potential of cannabis is driving an initial wave of legalization, we believe countries will eventually legalize the commercial production and sale of cannabis to adults for recreational use. In this regard, 2018 will be an important year, with the expected approval of the recreational Cannabis Act in Canada and the implementation of California's new recreational law. In Canada, we may observe for the first time the implementation of a large-scale national recreational law. Similarly, as the most populous U.S. state and one of the world's largest economies, California's recreational cannabis rollout will be a bellwether for the global cannabis industry. The successes, failures and lessons learned in Canada and California will have significant impacts on the cannabis industry worldwide.

In our view, the course taken by the U.S. federal government will impact the global cannabis industry more than any other factor. If the U.S. federal government were to change its current practice and aggressively enforce existing federal cannabis laws, we would expect a corresponding dampening of the industry worldwide. If the status quo were to continue in the United States, we would expect the current global legalization trend to continue, particularly in Europe, South America and Africa. And if federal prohibition in the United States ends, we expect a surge in cannabis legalization worldwide.

CHAPTER VI

U.S. and International Cannabis Market Estimates

Global Market Overview

Cannabis is the most widely cultivated, produced, trafficked and consumed drug worldwide, according to the United Nations Office on Drugs and Crime (UNODC). In 2003, the UNODC estimated that the global illegal cannabis market was $113 billion, with 160 million consumers. The UNODC continues to estimate the number of cannabis users worldwide and recently estimated that 183 million people globally between the ages of 15 and 64, or more than 4% of this age group, consumed cannabis in 2015.

In 2010, the RAND Corporation (RAND) estimated that the U.S. illegal cannabis market was $40 billion. Adjusting this estimate solely for inflation and population growth, the U.S. illegal market would now be approximately $48 billion.

Both the UNODC and RAND acknowledge the challenges inherent in studying an illegal consumer market, and both allow significant room for error in their estimates. However approximate, their estimates make clear that there is significant global demand for cannabis. Less clear is how quickly illegal markets will transition to legal markets, as well as the extent to which legalization may increase overall demand.

The Legal Cannabis Market: Key Growth Drivers

We believe that numerous factors will increase consumer penetration rates and the overall size of the legal cannabis market. Such factors include the following.

U.S. Federal Legalization. We believe it is a question of when, not if, cannabis becomes federally legal. We predict six developments on the path to federal legalization: (1) the FDA will begin approving individual pharmaceutical-grade drugs derived from cannabis; (2) more states will adopt medical cannabis laws; (3) more states will adopt recreational laws; (4) the FDA will adopt routine approval procedures for drugs with extracts of low-THC/high-CBD cannabis varieties; (5) the FDA will adopt routine approval procedures for drugs with extracts of high-THC cannabis varieties; and (6) cannabis parts and derivatives will be removed from the CSA schedules (either incrementally, starting with CBD, or all at once) and will be fully legal for medical and recreational purposes. (We expand on these predicted developments in Chapter IV, U.S. Legal Landscape.) We believe that federal legalization will trigger rapid growth in the U.S. market, propelled by interstate commerce, access to the federal banking system and acceleration of the cannabis-derived pharmaceuticals market. A change in the federal status of cannabis in the United States will not only drive U.S. market growth, but should provide a significant catalyst to the market worldwide.

Increasing Awareness of the Medical Efficacy of Cannabis. In aggregate, across all U.S. state laws, cannabis is legally recognized as a form of therapy or medicine for more than 50 medical conditions. In addition, at least 20 countries have medical laws that facilitate patient access to cannabis or concentrates for treating specified medical conditions. We believe that countries and U.S. states will continue to adopt and enhance legal frameworks for the medicinal use of cannabis products. In addition, we believe that many more cannabis consumers will emerge as research on cannabis increasingly demonstrates its medical efficacy and as more therapeutic products are developed and brought to market.

Increasing Recreational Legalization. Most laws facilitating access to cannabis, both in U.S. states and abroad, are medical laws. However, Uruguay and eight U.S. states have enacted recreational laws permitting the commercial production and sale of cannabis to adults for recreational and other uses (and Canada is widely expected to do so in mid-2018). In the handful of jurisdictions that started with medical laws and later adopted recreational laws—particularly in Colorado, Washington and Oregon—adoption of recreational laws has led to significant growth in overall market size and a rapid increase in the percentage of the market represented by recreational consumers. We expect 2018 will be a watershed year for the recreational market, with the implementation of California's new recreational law and the expected approval and implementation of Canada's recreational law. If these laws stimulate demand, as expected, and are otherwise viewed as successful, we expect more U.S. states and additional countries to follow suit with similar laws.

Broadening Range of Cannabis Consumer Products. Product innovation and advancements in cannabis varieties, concentrates, infused products, vaporizing technology and cannabis-derived pharmaceutical products will drive consumer adoption and spending. Cannabis consumer product companies will seek to differentiate their products through marketing, distribution, packaging, selection, quality and pricing. We believe that product differentiation and availability will be more prevalent in legal cannabis markets and will drive consumer transition from illegal to legal markets.

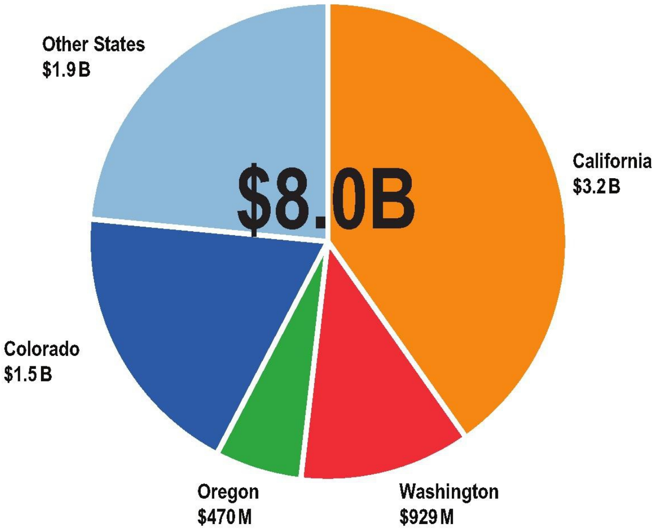
Declining Prices in U.S. State-Legal Cannabis Markets. The supply of cannabis has increased considerably with expanded state legalization in the United States. This increase has started to dampen retail and wholesale prices in various markets. As prices decline, we are starting to see closer price parity between state-legal and illegal markets (in the United States, cannabis is generally priced lower in illegal markets than in state-legal markets). Lower retail prices in state-legal markets should accelerate consumer transition from illegal to state-legal markets and drive increased overall penetration rates. However, state and local taxes will continue to impact pricing for cannabis products in state-legal cannabis markets.

U.S. State-Legal Cannabis Market

More than 97% of the U.S. population lives in a state or district (District of Columbia) with at least one law that permits the manufacturing, distribution, dispensing or possession of cannabis or concentrates. As described in more detail in Chapter IV, U.S. Legal Landscape, most of these laws are medical laws, and only eight states have enacted recreational laws. While the overall state-legal market has grown significantly, the addressable market has been constrained due to the lack of access to purely recreational consumers and the sometimes-narrow scope of medical conditions that qualify a patient to access medical cannabis.

We estimate that the 2017 U.S. state-legal cannabis market was $8.0 billion, with more than four million consumers. The breakdown of this estimate by state is shown in the following chart.

2017 U.S. State-Legal Cannabis Market Estimate



Source: Ackrell Capital

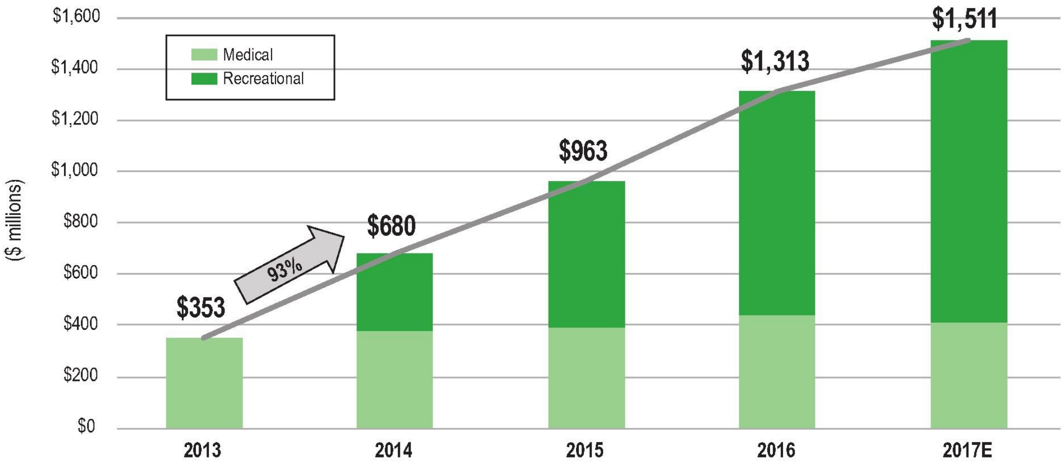
Recreational Sales as a Key Market Driver

Of the eight states that have enacted recreational laws, all had previously implemented medical laws. As shown in the following graphs for the three largest states to implement recreational laws, implementation of a recreational law significantly expanded the overall size of the legalized cannabis market, doubling the size of the market in each of these states in the first full calendar year after implementation. In addition, the percentage of the total market attributable to recreational consumers increased quickly. This indicates significant, pent-up consumer demand for legal cannabis in the United States, and we expect a significant increase in the size of the overall state-legal market as more states implement recreational laws.

Colorado

Colorado implemented a medical law in 2000 and a recreational law in 2014. The following graph shows the impact of Colorado's recreational law on the overall market in the state.

State-Legal Cannabis Market: Colorado

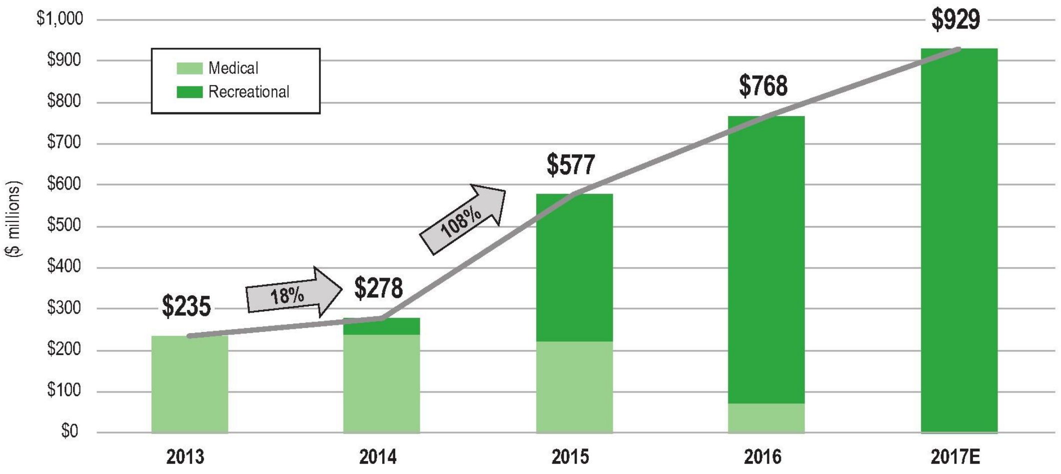


Source: Ackrell Capital

Washington

Washington implemented a medical law in 1998 and a recreational law in July 2014, and folded its medical law into its recreational law in 2017. The following graph shows the impact of these laws on the overall market in the state.

State-Legal Cannabis Market: Washington

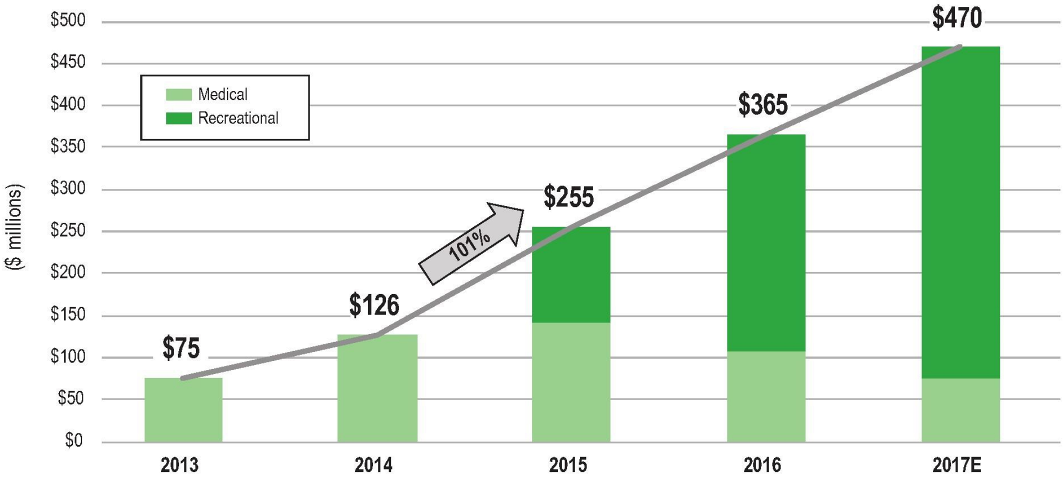


Source: Ackrell Capital

Oregon

Oregon implemented a medical law in 1998 and a recreational law in 2015. The following graph shows the impact of Oregon's recreational law on the overall market in the state.

State-Legal Cannabis Market: Oregon

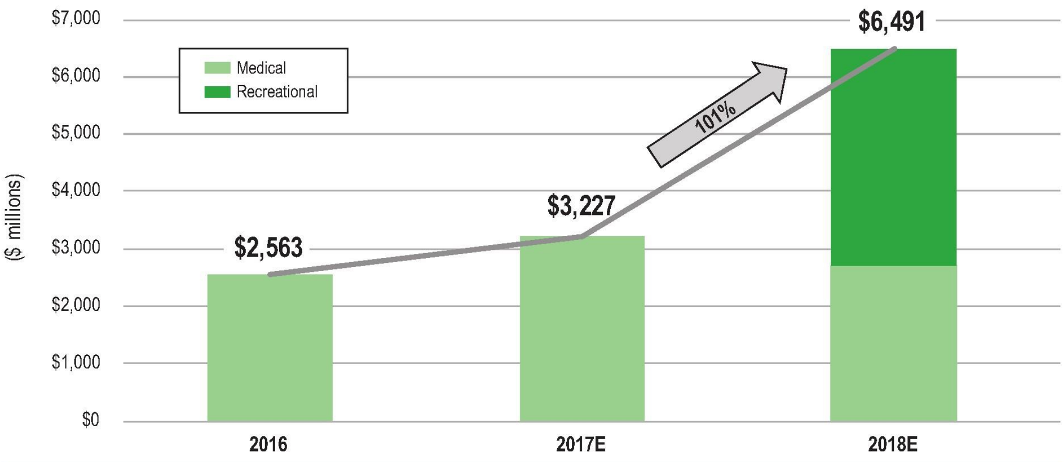


Source: Ackrell Capital

California

In 1996, California became the first U.S. state to implement a medical law. In November 2016, the state enacted a recreational law, the implementation of which is scheduled to begin in January 2018. The following graph shows the impact that California's recreational law is expected to have on the overall market in the state.

State-Legal Cannabis Market: California



Source: Ackrell Capital

U.S. Legalized Cannabis Market Forecast

Forecast Methodology

The cannabis industry is driven by consumers, similar to other highly regulated industries such as alcohol, tobacco and pharmaceuticals. Consequently, our methodology for forecasting the U.S. legalized cannabis market is based primarily on the following factors: (i) the number of eligible U.S. consumers, grouped by age; (ii) the penetration rate for each consumer age group; and (iii) the average monthly spending for each consumer age group.

We believe that the variable which will most impact the future size of the U.S. legalized cannabis market is the federal legalization process. How and when federal legalization occurs will impact other primary drivers of the market, including the number of eligible consumers, penetration rates and consumer spending. We predict six developments relating to federal legalization: (1) the FDA will begin approving individual pharmaceutical-grade drugs derived from cannabis; (2) more states will adopt medical cannabis laws; (3) more states will adopt recreational laws; (4) the FDA will adopt routine approval procedures for drugs with extracts of low-THC/high-CBD cannabis varieties; (5) the FDA will adopt routine approval procedures for drugs with extracts of high-THC cannabis varieties; and (6) cannabis parts and derivatives will be removed from the CSA schedules (either incrementally, starting with CBD, or all at once) and will be fully legal for medical and recreational purposes. (We expand on these predicted developments in Chapter IV, U.S. Legal Landscape.)

We do not predict that these developments necessarily will occur in the order presented. We do expect some of them to develop in parallel, and none of them depends fundamentally on any other. For example, Congress could cause development (6) at any time by passing legislation that removes cannabis from the CSA schedules and establishes a national framework for recreational and medical cannabis regulation. Developments (1) through (3) largely reflect incremental developments within the existing legal environment. We do not expect developments (4), (5) or (6) to occur during the current presidential term, but we believe that there is a reasonable chance development (4) could begin within the next five years and development (5) could occur within two years thereafter. In total, we believe that it could take up to 10 years or more before the federal legalization process reaches development (6) and cannabis becomes fully legal under federal law. For our analysis, we assume (i) development (4) begins in 2023, (ii) development (5) follows two years thereafter and (iii) development (6) occurs by 2027 and cannabis becomes fully legal in the United States. (The reader is cautioned that cannabis may never be legalized federally in the United States.)

Eligible U.S. Consumers

We used U.S. Census data to identify the number of people in the United States aged 21 years or older. While some therapeutic applications of cannabis are targeted at people under 21 years of age, we excluded this group of consumers from our estimates. We assumed a nominal annual growth rate for the U.S. population. With more than 97% of the U.S. population currently living in a state or district with at least one law that permits the manufacturing, distribution, dispensing or possession of cannabis or concentrates, we view the potential pool of eligible consumers to be virtually the entire U.S. adult population.

Consumer Penetration Rates

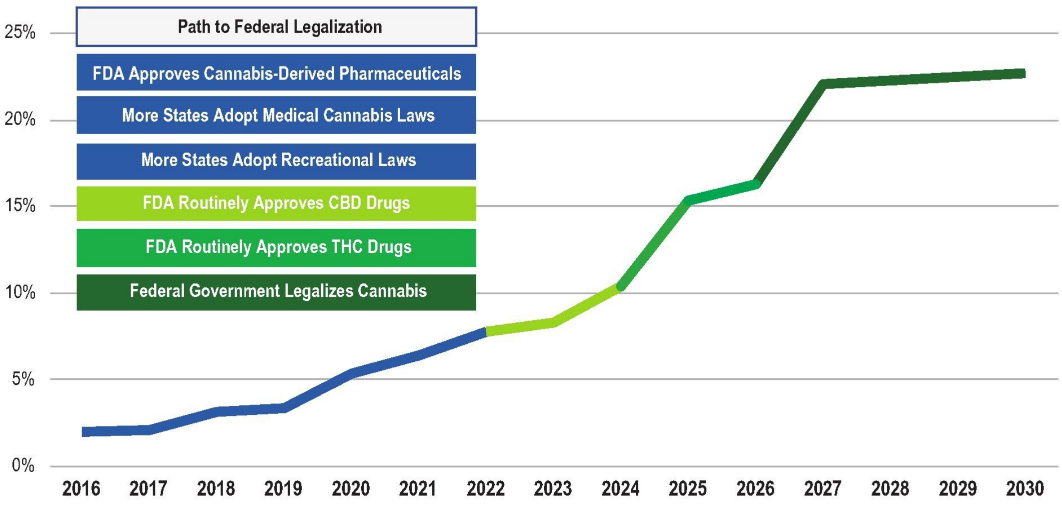
We assigned current and prospective consumer penetration rates to each state based on our assessment of whether legal consumer access to cannabis in the state should be characterized as "limited," "moderate" or "broad." This assessment was based in part on (i) the nature of the cannabis laws in each state and (ii) the extent of the cannabis dispensary network in each state. We assigned a specific penetration rate to each age group, with the 21–29 age group having the highest and the 70+ age group having the lowest.

Consumer penetration rates are significantly affected by the available channels for legal access to cannabis. States that have only medical laws typically have lower penetration rates than states having both medical and recreational laws because the qualifying-condition requirement of medical laws precludes many potential consumers. Similarly, penetration rates are impacted by the widely varying number and nature of qualifying medical conditions designated by medical laws. States that designate many conditions or highly subjective conditions such as "chronic pain" tend to have higher penetration rates than states that designate relatively few or highly specific conditions.

Penetration rates also are affected by the reach of a state's cannabis dispensary network. Some states have extensive dispensary networks that provide convenient access to cannabis for most consumers. Other states have a limited number of dispensaries or networks that reach only urban areas; restricted networks can be the result of factors such as the amount of time a state has permitted legal cannabis access and the prevalence of county and municipal laws restricting (or in some cases, completely banning) dispensary operations.

Prior to federal legalization, we expect U.S. penetration rates to increase as states implement new medical and recreational laws and expand the scope of qualifying medical conditions under existing medical laws, and as the FDA begins approving pharmaceutical-grade drugs derived from cannabis. Although we believe penetration rates in states with recreational laws and robust dispensary networks may fairly represent penetration rates after federal legalization, penetration rates may increase further as the medical efficacy of cannabis becomes better understood and negative perceptions of cannabis diminish. Following federal legalization, we believe penetration rates may ultimately be as high as (or higher than) those in other consumer-driven industries, such as alcohol, tobacco and pharmaceuticals. The consumer penetration rates used in our analysis are as follows.

U.S. Legalized Cannabis Market: Consumer Penetration Rate

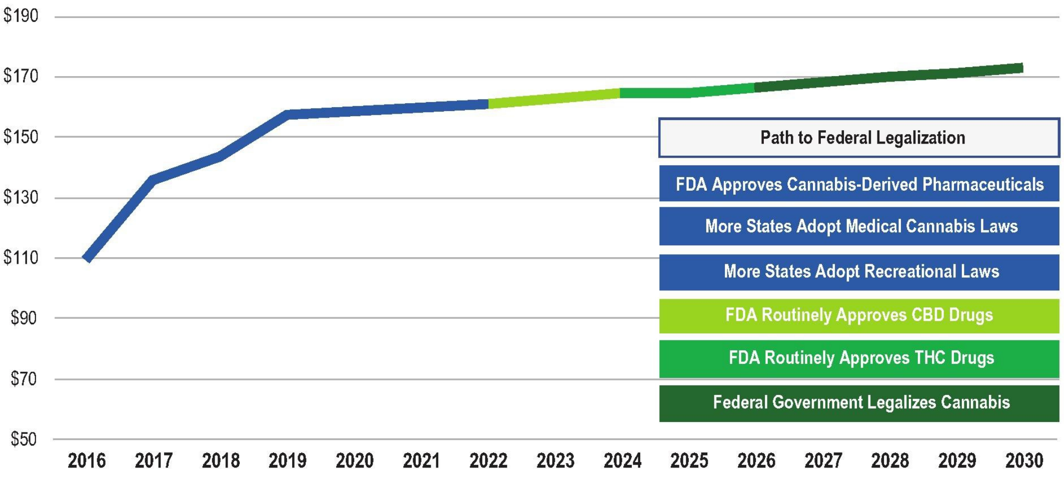


Source: Ackrell Capital

Monthly Cannabis Spending

We estimated average monthly spending on cannabis using data provided by dispensaries in states with recreational laws. We then assigned spending levels (low, moderate and heavy) to each age group of eligible consumers by state. The resulting weighted averages of monthly consumer spending used in our analysis are as follows.

U.S. Legalized Cannabis Market: Weighted Average Monthly Consumer Spending

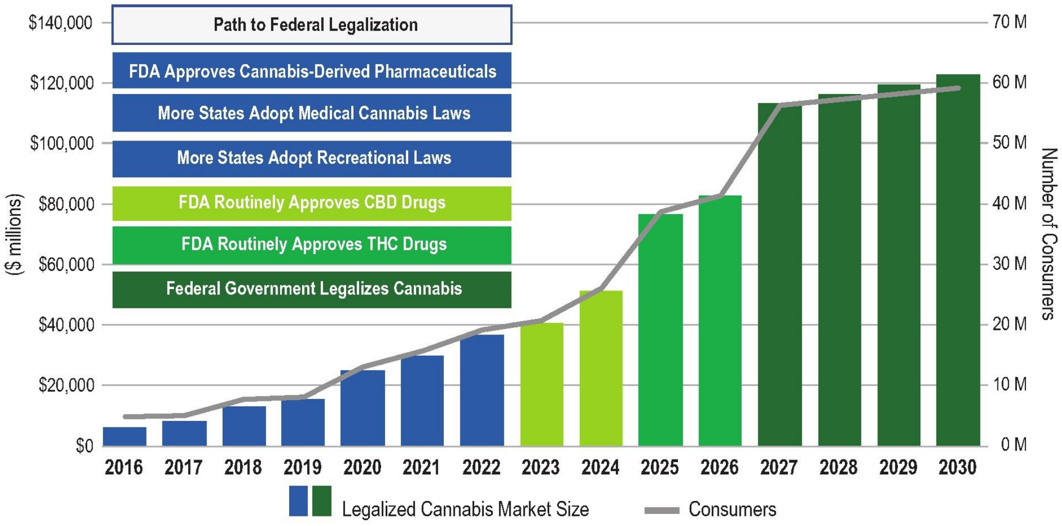


Source: Ackrell Capital

U.S. Legalized Cannabis Market Estimates

Based on our assumptions and methodology, we believe that the U.S. legalized cannabis market will ultimately exceed $100 billion annually, with more than 50 million consumers. As shown in the following graph, we believe these levels will be reached after the federal government legalizes cannabis.

U.S. Legalized Cannabis Market



Source: Ackrell Capital. Assumes cannabis will be legalized federally by 2027. Cannabis may never be legalized federally in the United States.

Because penetration rate and average monthly spending assumptions significantly affect our forecast, we illustrate this impact with the following sensitivity analysis, which shows the estimated market size in 2030 using a range of penetration rates and monthly spending averages.

2030 U.S. Legalized Cannabis Market Size: Sensitivity Analysis

($ millions)		**Average Monthly Consumer Spending**				
		$100	**$125**	**$150**	**$175**	**$200**
Adult Population Penetration Rate	**5%**	$13,954	$17,442	$20,930	$24,419	$27,907
	10%	27,907	34,884	41,861	48,838	55,814
	15%	41,861	52,326	62,791	73,256	83,722
	20%	55,814	69,768	83,722	97,675	111,629
	25%	69,768	87,210	104,652	122,094	139,536
	30%	83,722	104,652	125,582	146,513	167,443
	35%	97,675	122,094	146,513	170,932	195,350

Source: Ackrell Capital

Methodology and Estimates: Industry Comparisons

To evaluate our methodology and results, we compare estimated values from our model with values for the same parameters in markets for certain other stimulants and pharmaceuticals. We believe that this comparison is useful because cannabis is used recreationally in much the same way alcohol, coffee and tobacco are used, and because cannabis may be an alternative to pharmaceuticals currently used to treat a range of medical conditions. The following table compares the estimated penetration rate, average monthly consumer spending and U.S. retail market size for a number of common stimulants and pharmaceutical categories.

Comparison between Cannabis and Common Stimulants and Substances

	Alcohol	Coffee	Tobacco	Painkillers	Anti-depressants	Cannabis (Future)
Primary Usage	Recreational	Recreational	Recreational	Medicinal	Medicinal	Recreational / Medicinal
Adult Penetration %	50%	50%	17%	40%	25%	20%
Monthly Consumer Spending	\$45 to \$200	\$80 to \$100	\$40 to \$80	\$50 to \$200	\$50 to \$100	\$50 to \$500
U.S. Retail Market Size	\$200B	\$35B	\$100B	\$300B	\$60B	\$100B

Source: Ackrell Capital

This comparison demonstrates that our U.S. legalized cannabis market estimates are in line with U.S. retail markets for alcohol, coffee, tobacco, and pharmaceutical painkillers and antidepressants.

International Legal Cannabis Market Forecast

As previously discussed, cannabis is the most widely consumed drug worldwide: an estimated 183 million people between the ages of 15 and 64 consumed cannabis in 2017. Cannabis legalization is gaining momentum around the world. At least 20 countries now have medical laws that facilitate patient access to cannabis or concentrates for treating specified medical conditions. Select countries with such laws include Australia, Canada, Colombia and Germany; countries without such laws include China, Japan, Russia and the United States. While the merits of medical cannabis are currently driving legalization, we believe that—like Uruguay and numerous U.S. states—other countries will ultimately enact and implement recreational laws.

Canada's legal cannabis market (presently limited to medical cannabis) is currently the largest federally legal cannabis market in the world, estimated at $1.5 billion in 2017. We anticipate that Canada will enact and implement its proposed recreational Cannabis Act in mid-2018 and that implementation will significantly expand the size of Canada's overall market.

International Market Size Estimate Methodology

Similar to the methodology for our U.S. estimates, the primary factors for our international legal cannabis market estimates are the estimated number of eligible consumers, penetration rates and monthly spending. Of course, these and other factors affecting market size vary considerably across continents and regions because each country has its own unique market characteristics, including laws, culture, religions, consumer preferences and disposable income.

We do not attempt to estimate the timing of legal changes that affect consumer penetration rates. Rather, we estimate the size of potential international markets at maturity when penetration rates have stabilized. The time required for markets in particular countries to reach maturity will vary widely and, like the U.S. market, could be 10 years or more.

To estimate average monthly consumer spending, we analyzed a country's per capita average monthly income and assumed a certain percentage was spent on cannabis products. The resulting estimates of monthly spending in developed countries differs vastly from that in developing countries.

International Market Size Estimates

Our estimates for the international legal cannabis market include estimates for select countries with medical or recreational laws and certain countries we believe may develop into legal markets for cannabis in the foreseeable future. The following table lists each identified country, ranked by Gross Domestic Product (GDP), with its estimated adult population, monthly cannabis consumer spending and potential market value.

Emerging and Anticipated International Legal Cannabis Markets

Country	GDP Rank	2017 Estimated Adult Population (in millions)	Projected Monthly Consumer Spending ($)	Potential Market Value ($ millions)
Select Countries with Medical or Recreational Laws				
Germany	4	59.0	$78 – $155	$16,518
Brazil	8	150.5	16 – 31	8,524
Italy	9	42.5	56 – 112	8,599
Canada	10	26.6	78 – 155	7,453
Australia	13	12.2	97 – 194	4,268
Mexico	16	92.9	16 – 32	5,380
Turkey	17	58.3	20 – 40	4,178
Netherlands	18	12.2	82 – 165	3,632
Switzerland	20	5.8	145 – 289	2,999
Argentina	21	23.0	21 – 43	1,766
Poland	24	27.4	23 – 45	2,223
Israel	32	5.8	64 – 129	1,336
Colombia	37	35.3	11 – 22	1,429
Chile	44	13.0	24 – 48	1,124
Peru	48	23.0	11 – 21	878
Czech Republic	51	7.9	31 – 62	890
Greece	52	7.9	34 – 67	962
Uruguay	78	2.2	27 – 54	211
Croatia	84	2.9	22 – 43	223
Jamaica	120	2.2	8 – 17	65
Macedonia	132	1.4	9 – 18	46
Lesotho	163	1.4	2 – 4	11
Certain Additional Countries				
United Kingdom	5	47.5	75 – 151	12,908
India	6	964.1	3 – 6	10,379
France	7	48.2	69 – 139	12,040
Spain	14	33.1	49 – 98	5,841
Sweden	23	7.2	97 – 194	2,520
South Africa	35	40.3	10 – 20	1,416
Portugal	49	7.2	35 – 71	916
		Midpoint Weighted Average	**$28**	**Total** **$118,735**

Source: Ackrell Capital

The projected market value for each country shown in the preceding table is calculated assuming a 20% penetration rate and the midpoint of the projected average monthly spending range. Because each country's penetration rate and monthly spending will vary considerably and are difficult to predict, we illustrate the impact of varying these factors with the following sensitivity analysis, which shows the estimated market size at maturity using a range of penetration rates and monthly spending weighted averages.

International Legal Cannabis Market Size: Sensitivity Analysis

($ millions)		**Weighted Average Monthly Consumer Spending**				
		$10	**$20**	**$30**	**$40**	**$50**
Adult Population Penetration Rate	**5%**	$10,606	$21,211	$31,817	$42,422	$53,028
	10%	21,211	42,422	63,634	84,845	106,056
	15%	31,817	63,634	95,450	127,267	159,084
	20%	42,422	84,845	127,267	169,690	212,112
	25%	53,028	106,056	159,084	212,112	265,140
	30%	63,634	127,267	190,901	254,534	318,168
	35%	74,239	148,478	222,718	296,957	371,196

Source: Ackrell Capital

Based on the preceding assumptions and methodology, we believe that the international legal cannabis market for select countries with medical or recreational laws and certain countries we believe may develop into legal markets for cannabis has the potential to exceed $200 billion within the next 10 to 15 years. And as discussed earlier in this chapter, we forecast the U.S. legal cannabis market to reach more than $100 billion in this same period. Together, these two forecasts indicate a global legal cannabis market in the foreseeable future of more than $300 billion.

In our view, most countries located in Asia will take the longest to enact and implement cannabis access laws; therefore, we have not included the markets in countries such as China, with a population of 1.4 billion people, or Japan, with the third highest GDP in the world, in our global market estimate. If cannabis legalization continues in the United States and the rest of the world as we anticipate, we believe that many countries in Asia will ultimately follow suit. If and when that occurs, the size of the global legal cannabis market will increase significantly and, we believe, may ultimately exceed $500 billion annually.

As discussed on page 175, readers are cautioned to not place undue reliance on our opinions, predictions or estimates. Almost certainly, our opinions, predictions and estimates will prove inaccurate in some respects. A number of factors could cause actual results or events to differ materially from those indicated by our opinions, predictions and estimates. U.S. states and countries abroad may reverse their cannabis legalization efforts. The medical efficacy of cannabis may not prove to be significant. Cannabis may never be legalized federally in the United States. Certain factors affecting the cannabis industry are discussed in more detail in Chapter IX, Cannabis Industry Risk Factors.

CHAPTER VII

Capital Markets for Cannabis Companies

■ Capital Markets Overview

Hundreds, if not thousands, of cannabis-related companies are seeking to raise capital—thus presenting investment opportunities for sophisticated investors who want to participate in the cannabis industry. Investors have their choice of investing in the more than 300 publicly traded cannabis-related companies, or in the significant number of private companies raising capital. Investors may also choose among stock markets (both within the United States and internationally), type of security (equity versus debt) and type of company (companies across all segments of the industry are raising capital).

It is important to note, however, that most of the cannabis-related companies that are raising capital—even publicly traded companies—are in early stages of development, have de minimis revenue and are not profitable. More than 85% of the publicly traded cannabis-related companies have annual revenue of less than $5 million, and less than 5% have annual revenue greater than $25 million.

Most investors in the cannabis industry today are retail or individual investors. While an increasing number of family office and strategic investors are now participating in the cannabis industry, we believe that many institutional investors (most notably the traditional venture capital and private equity communities) will not invest in the industry until more companies in the industry mature and the legal environment becomes more favorable.

Cannabis-related companies raised more than $2.0 billion in the public and private markets in 2017; however, except for a few transactions of notable size, many of the financings were small (less than $5 million), which provides further evidence that the capital markets are being driven primarily by retail investors. Without traditional institutional investor support, a funding gap exists in the industry: companies are seeking to raise more capital than investors are willing or able to provide. We believe that this is especially true in the private markets, where many companies struggle to raise financing.

We share the belief held by many that, ultimately, established companies from analogous industries—alcohol, pharmaceutical, tobacco and consumer products—will enter the cannabis industry through minority investment, by acquisition or otherwise. Examples of the emergence of such strategic investors include Constellation Brands, Inc.'s (NYSE: STZ) approximately $190 million investment in Canopy Growth Corporation (TSX: WEED) and the more than $400 million spent by The Scotts Miracle-Gro Company (NYSE: SMG) to acquire soil, fertilizer, hydroponic equipment and lighting companies that are supplying the cannabis industry. These types of transactions help support the valuation levels in the industry and, to an extent, validate investors' enthusiasm for the industry.

The stock price performance and valuations of cannabis-related companies continue to be robust, irrespective of the aforementioned funding gap. In general, we believe that valuations in both the public and private markets are being driven more by investors' expectations for the future growth of the cannabis industry than by individual company fundamentals. Similarly, especially in the over-the-counter stock market in the United States—where most of the public cannabis-related companies are traded—stock price fluctuations and valuations tend to be heavily influenced by the illiquidity in most stocks and the trading strategies of those involved. Overall, we believe that the capital markets for the cannabis industry will become more efficient and rational over time as we expect increased participation from institutional and strategic investors.

Public Capital Markets

More than 300 cannabis-related companies are traded on one or more stock markets in the United States, Canada and other international locations. Although these companies are publicly traded, most are in early stages of development, have de minimis revenue and are not profitable. We use the term "cannabis-related" to include companies that participate solely in the cannabis industry and those that participate in the cannabis industry in addition to other industries or markets.

The ability of companies to access capital markets is dependent largely on the legal landscape for cannabis in a particular country. For example, the capital markets in countries such as Canada, Australia, Germany and Israel (countries that have a more permissive legal framework for cannabis) have been receptive to cannabis-related companies, while the reception by capital markets in the United States has been more varied.

In evaluating publicly traded companies, an investor should be cognizant of where the company is traded, as there are significant differences across the various exchanges and markets with respect to listing requirements, liquidity, independent research and types of investors. Many cannabis-related companies are traded on more than one market in order to attract additional investors and facilitate trading in multiple jurisdictions. However, we believe that it is instructive to evaluate a company based on the primary market on which it trades (We determine a company's primary market based on a number of factors, including stock price history, trading volume and availability of estimates.)

In the United States, a limited number of cannabis-related companies are traded on the Nasdaq Stock Market (Nasdaq), the New York Stock Exchange (NYSE) and the NYSE American (NYSE American), the NYSE's market for small to mid-size capitalization companies. In addition, more than 200 cannabis-related companies are traded on the over-the-counter stock market (OTC). Nasdaq and the NYSE are two of the largest and most recognized stock exchanges in the world, with stringent listing, trading and corporate governance requirements. Conversely, the OTC has much less stringent requirements; as a result, most publicly traded cannabis-related companies are traded on the OTC.

In Canada, cannabis-related companies are traded on the Toronto Stock Exchange (TSX), the TSX Venture Exchange (TSXV), which is an affiliate of the TSX, and the Canadian Securities Exchange (CSE). The TSX is one of the world's largest stock exchanges and, similar to Nasdaq and the NYSE, has stringent listing, trading and corporate governance requirements. The TSXV focuses on companies with small market capitalization and has less stringent listing requirements than the TSX. The CSE is focused on micro capitalization and emerging growth companies, and it has the least stringent listing requirements of the primary Canadian exchanges. In order to be listed on either the TSX or the TSXV, a company is required to be in compliance with Canada's Access to Cannabis for Medical Purposes Regulations (ACMPR) and all applicable laws in jurisdictions within which it operates. (Operations of listed companies are restricted in jurisdictions, such as the United States, where cannabis is federally prohibited.) Unlike the TSX and TSXV, the CSE has allowed companies listed on its exchange to invest in, acquire and otherwise operate cannabis-related businesses in the United States.

The following table provides a summary of the cannabis-related companies traded on U.S., Canadian and Australian stock markets. As stated previously, many cannabis-related companies are traded on more than one market to attract additional investors and facilitate trading in multiple jurisdictions. For example, most companies traded on the Canadian markets are also traded on the OTC.

Summary of Publicly Traded Cannabis-Related Companies

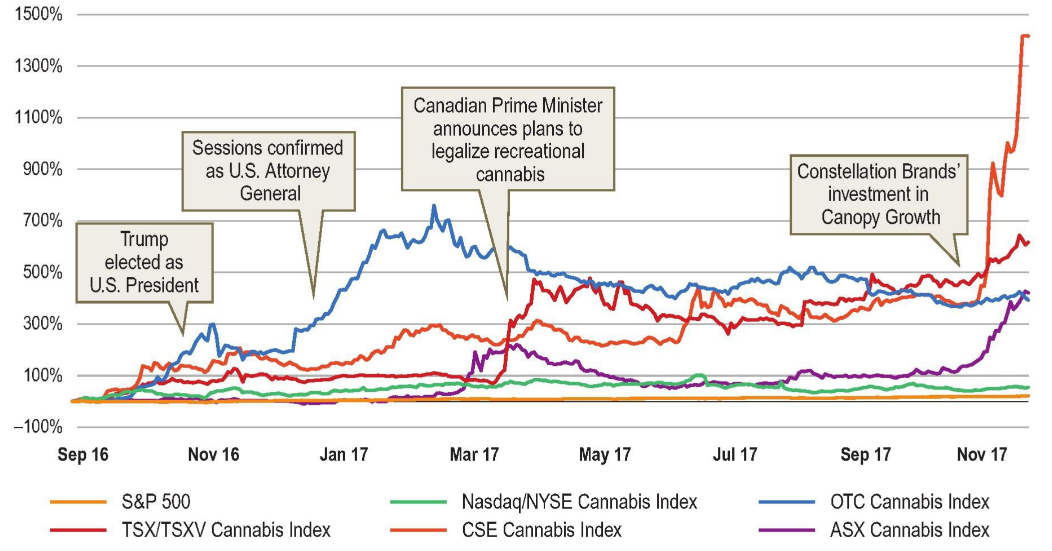
(As of November 30, 2017)		Average ($U.S. millions)					
	Number of Companies	Market Value	Enterprise Value	Cash	Debt	LTM Revenue	LTM EBITDA
Nasdaq	4	$1,033.6	$884.5	$153.6	$4.5	$44.0	–$81.1
NYSE	1	63.5	41.3	22.2	0.0	4.6	–1.2
NYSE American	2	152.1	145.7	7.8	1.4	7.3	–6.5
OTC	212	46.3	65.5	5.7	25.0	14.0	0.2
United States	219	$65.5	$81.2	$8.5	$24.3	$14.5	–$1.4
Toronto Stock Exchange (TSX)	6	$1,361.5	$1,311.4	$71.0	$20.8	$26.6	$0.8
TSX Venture Exchange (TSXV)	20	131.5	123.9	10.8	3.3	1.2	–3.5
Canadian Securities Exchange (CSE)	41	72.6	72.0	2.0	1.4	1.8	–2.8
Canada	67	$210.6	$203.3	$11.1	$3.8	$4.0	–$2.2
Australian Securities Exchange (ASX)	14	$85.3	$80.1	$5.9	$0.7	$0.9	–$2.1
Australia	14	$85.3	$80.1	$5.9	$0.7	$0.9	–$2.1

Source: S&P Global Market Intelligence. Companies that are traded on more than one market are included in their primary market as determined by S&P Global Market Intelligence, based on stock price history, trading volume and availability of estimates. Enterprise Value is defined as Market Value plus Debt minus Cash and Cash Equivalents. LTM is Last Twelve Months. EBITDA is defined as Earnings Before Interest, Taxes, Depreciation and Amortization.

Stock Price Performance of Publicly Traded Cannabis-Related Companies

The following chart shows the stock price performance of publicly traded cannabis-related companies since September 30, 2016. As shown in the chart, the stock price performance of cannabis-related companies trading on Canadian markets received a boost from the announcement of the proposed recreational cannabis legislation in Canada by Prime Minister Justin Trudeau and, more recently, from Constellation Brands' investment in Canopy Growth. Similarly, the continuing positive price performance of cannabis-related companies trading on U.S. markets has not been slowed by the election of Donald Trump as President and the selection of Jeff Sessions as Attorney General of the United States (two events that were viewed by many as potentially having a negative impact on the U.S. cannabis industry).

Global Cannabis Stock Price Performance

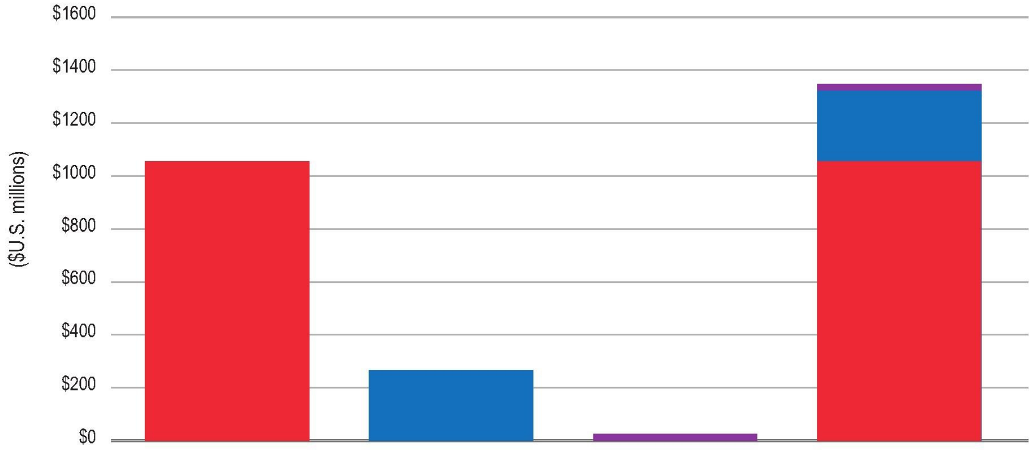


Source: S&P Global Market Intelligence

Capital Raised by Publicly Traded Cannabis-Related Companies

The following table shows the amount of capital (equity and debt) raised by cannabis-related companies traded on the U.S., Canadian and Australian stock markets in the twelve months ended September 30, 2017. While more than $1.3 billion was raised, the data indicates that relatively few companies were able to raise capital, given the aggregate number of publicly traded cannabis-related companies, and the amount raised per transaction was small, supporting the assertion that the market is still driven primarily by retail investors.

Capital Raised by Publicly Traded Cannabis-Related Companies (LTM ended September 30, 2017)



	Canada	United States	Australia	Total
Amount Raised	$1056	$268	$26	$1350
Number of Deals	60	15	3	78
Average Deal Size	$18	$18	$9	$17

Source: S&P Global Market Intelligence. In December 2017, a $317 million financing was completed by GW Pharmaceuticals (Nasdaq: GWPH), but the transaction occurred outside the date range of the analysis. Due to the size of the transaction, it is worth noting here.

Public Capital Markets: United States

As of November 30, 2017, four cannabis-related companies were trading on Nasdaq (all in the pharmaceutical industry and focused on receiving FDA approval for selected cannabinoid applications), one was trading on the NYSE (a real estate investment trust, or REIT, focused on the acquisition and management of properties leased to state-licensed operators for their regulated medical-use cannabis facilities), two were trading on the NYSE American (both in the pharmaceutical industry) and more than 200 cannabis-related companies were trading on the OTC.

Most of the companies trading on the OTC (i) are "penny" stocks that trade at less than $5.00 per share, (ii) have limited trading volume and liquidity, (iii) have significant price volatility, and (iv) have little or no institutional investor support. The U.S. Securities and Exchange Commission (SEC) and the Financial Industry Regulatory Authority (FINRA) have historically expressed concerns regarding the "penny" stock industry in general and both have issued alerts to warn investors about potential scams associated with purported cannabis-related stocks. In addition, the SEC has initiated actions against numerous purported cannabis-related companies and executives for fraud, insider trading, stock manipulation and other activities.

The following table provides a summary of cannabis-related companies traded on the U.S. stock markets.

Summary of U.S. Publicly Traded Cannabis-Related Companies

(As of November 30, 2017)

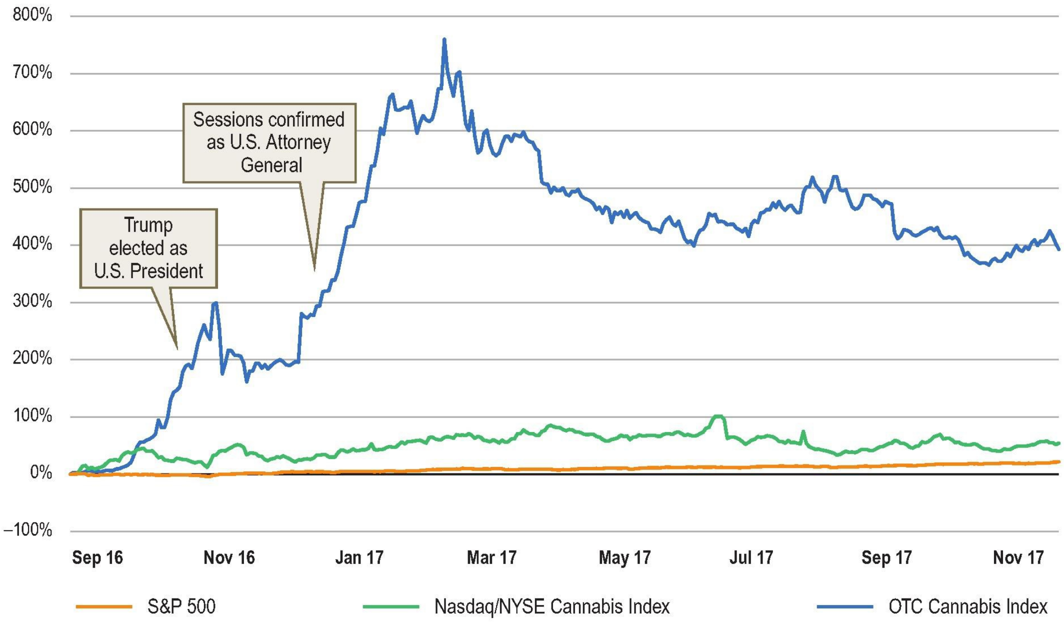
		Average ($U.S. millions)					
	Number of Companies	Market Value	Enterprise Value	Cash	Debt	LTM Revenue	LTM EBITDA
Nasdaq	4	$1,033.6	$884.5	$153.6	$4.5	$44.0	–$81.1
NYSE	1	63.5	41.3	22.2	0.0	4.6	–1.2
NYSE American	2	152.1	145.7	7.8	1.4	7.3	–6.5
OTC	212	46.3	65.5	5.7	25.0	14.0	0.2
United States	219	$65.5	$81.2	$8.5	$24.3	$14.5	–$1.4

Source: S&P Global Market Intelligence. Companies that are traded on more than one market are included in their primary market as determined by S&P Global Market Intelligence, based on stock price history, trading volume and availability of estimates. Enterprise Value is defined as Market Value plus Debt minus Cash and Cash Equivalents. LTM is Last Twelve Months. EBITDA is defined as Earnings Before Interest, Taxes, Depreciation and Amortization.

Stock Price Performance of U.S. Publicly Traded Cannabis-Related Companies

The following chart shows the stock price performance of selected publicly traded cannabis-related companies in the United States since September 30, 2016. As shown in this chart, the election of Donald Trump as President and the selection of Jeff Sessions as Attorney General of the United States have not slowed the continuing positive price performance of cannabis-related companies trading on U.S. markets.

U.S. Cannabis Stock Price Performance



Trump elected as U.S. President

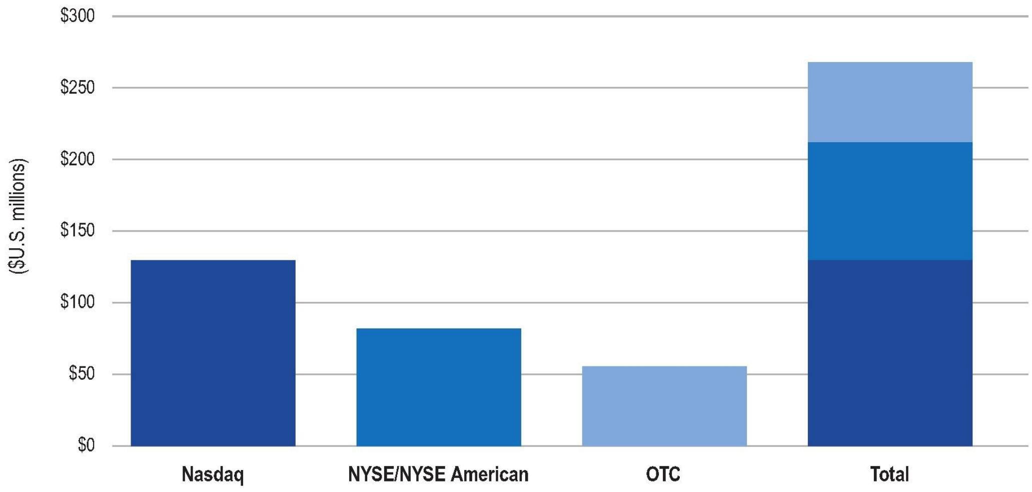
Sessions confirmed as U.S. Attorney General

Source: S&P Global Market Intelligence

Capital Raised by U.S. Publicly Traded Cannabis-Related Companies

The following table shows the amount of capital (equity and debt) raised by cannabis-related companies traded on U.S. stock markets in the twelve months ended September 30, 2017. Although more than 200 cannabis-related companies were traded on the OTC during this period, the data indicates that very few raised meaningful capital.

Capital Raised by U.S. Publicly Traded Cannabis-Related Companies (LTM ended September 30, 2017)



	Nasdaq	NYSE/NYSE American	OTC	Total
Amount Raised	$130	$82	$56	$268
Number of Deals	2	2	11	15
Average Deal Size	$65	$41	$5	$18

Source: S&P Global Market Intelligence. In December 2017, a $317 million financing was completed by GW Pharmaceuticals (Nasdaq: GWPH), but the transaction occurred outside the date range of the analysis. Due to the size of the transaction, it is worth noting here.

Financial Data and Trading Multiples of U.S. Publicly Traded Cannabis-Related Companies

The following tables show selected financial and trading information of cannabis-related companies that are publicly traded on U.S. markets. As the tables indicate, with few exceptions, these companies have little to no revenue and are not profitable. Consequently, most trading multiples are not meaningful and the companies tend to trade more on expectations for the overall cannabis industry than on specific company fundamentals (especially for those companies traded on the OTC).

Nasdaq

($U.S. millions, except stock price)

								LTM EV Multiples		Forward Revenue Multiples		Forward EBITDA Multiples	
Company	**Ticker**	**Stock Price 11/30/17**	**% Below 52-Week High**	**Market Value**	**Enterprise Value (EV)**	**LTM Revenue**	**LTM EBITDA**	**Revenue**	**EBITDA**	**2018**	**2019**	**2018**	**2019**
Cara Therapeutics, Inc.	NasdaqGM:CARA	$12.45	56.3%	$406.0	$303.0	$0.9	–$65.8	NM	NM	NM	86.1x	NM	NM
GW Pharmaceuticals plc	NasdaqGM:GWPH	124.49	9.1%	3,153.2	2,847.7	11.0	–191.6	NM	NM	NM	11.4	NM	NM
INSYS Therapeutics, Inc.	NasdaqGM:INSY	5.30	64.7%	388.6	266.9	164.1	–35.6	1.6x	NM	1.7x	1.4	NM	6.4x
Zynerba Pharmaceuticals, Inc.	NasdaqGM:ZYNE	13.77	46.9%	186.6	120.4	0.0	–31.2	NM	NM	NM	NM	NM	NM
		Median	**51.6%**	**$397.3**	**$285.0**	**$6.0**	**–$50.7**	**1.6x**	**NM**	**1.7x**	**11.4x**	**NM**	**6.4x**

New York Stock Exchange and NYSE American

($U.S. millions, except stock price)

								LTM EV Multiples		Forward Revenue Multiples		Forward EBITDA Multiples	
Company	**Ticker**	**Stock Price 11/30/17**	**% Below 52-Week High**	**Market Value**	**Enterprise Value (EV)**	**LTM Revenue**	**LTM EBITDA**	**Revenue**	**EBITDA**	**2018**	**2019**	**2018**	**2019**
22nd Century Group, Inc.	AMEX:XXII	$2.33	33.4%	$287.9	$273.2	$14.0	–$11.3	19.5x	NM	12.7x	10.7x	NM	NM
India Globalization Capital, Inc.	AMEX:IGC	0.58	27.6%	16.3	18.2	0.6	–1.6	28.8	NM	NA	NA	NA	NA
Innovative Industrial Properties, Inc.	NYSE:IIPR	18.15	11.5%	63.5	41.3	4.6	–1.2	9.0	NM	2.4	1.3	3.7x	1.6x
		Median	**27.6%**	**$63.5**	**$41.3**	**$4.6**	**–$1.6**	**19.5x**	**NM**	**7.6x**	**6.0x**	**3.7x**	**1.6x**
Ancillary													
Constellation Brands, Inc.	NYSE:STZ	$217.59	4.2%	$42,572.2	$51,393.3	$7,458.5	$2,709.3	6.9x	19.0x	6.7x	6.3x	18.3x	16.6x
The Scotts Miracle-Gro Company	NYSE:SMG	98.90	3.5%	5,689.7	6,969.0	2,642.1	500.0	2.6	13.9	2.5	2.4	12.9	12.0
		Median	**3.9%**	**$24,131.0**	**$29,181.2**	**$5,050.3**	**$1,604.7**	**4.8x**	**16.5x**	**4.6x**	**4.3x**	**15.6x**	**14.3x**

Source: S&P Global Market Intelligence. Not Meaningful (NM) used for negative multiples, and for revenue multiples greater than 100.0x and EBITDA multiples greater than 50.0x. Not Available (NA) used for information that is not available. Enterprise Value is defined as Market Value plus Debt minus Cash and Cash Equivalents. LTM is Last Twelve Months. EBITDA is defined as Earnings Before Interest, Taxes, Depreciation and Amortization.

Over The Counter (Market Value Greater than $25 million)

($U.S. millions, except stock price)

Company	Ticker	Stock Price 11/30/17	% Below 52-Week High	Market Value	Enterprise Value (EV)	LTM Revenue	LTM EBITDA	LTM EV Multiples	
								Revenue	EBITDA
Abattis Bioceuticals Corp.	OTCQB:ATTBF	$0.22	20.2%	$39.5	$38.8	$0.0	–$3.6	NM	NM
American Cannabis Company, Inc.	OTCQB:AMMJ	0.75	40.5%	38.6	36.7	2.9	0.3	12.7x	NM
AmeriCann, Inc.	OTCQB:ACAN	2.03	63.1%	39.3	42.4	0.0	–1.8	NM	NM
Amfil Technologies, Inc.	OTCPK:AMFE	0.15	36.1%	99.7	99.9	0.2	NA	NM	NM
AXIM Biotechnologies, Inc.	OTCQB:AXIM	7.02	64.6%	382.8	387.5	0.0	–2.9	NM	NM
Cannabics Pharmaceuticals Inc.	OTCQB:CNBX	1.02	86.6%	120.7	117.3	0.0	–1.8	NM	NM
Cannabis Leaf, Inc.	OTCPK:PCFP	0.97	61.2%	48.8	48.9	0.0	NA	NM	NM
Cannabis Sativa, Inc.	OTCQB:CBDS	3.95	58.4%	83.8	83.5	0.1	–6.4	NM	NM
Cannabis Science, Inc.	OTCPK:CBIS	0.06	56.3%	155.4	158.1	0.0	–9.6	NM	NM
Cannabix Technologies Inc.	OTCPK:BLOZ.F	1.19	37.4%	103.0	100.5	0.0	NA	NM	NM
CannaGrow Holdings, Inc	OTCPK:CGRW	0.99	57.0%	100.3	102.7	1.7	–1.4	62.0	NM
Corix Bioscience, Inc.	OTCQB:CXBS	1.19	45.9%	29.6	29.6	0.0	NA	NM	NM
Earth Science Tech, Inc.	OTCPK:ETST	0.81	79.5%	32.0	31.9	0.4	NA	74.1	NM
Evergreen-Agra Global	OTCQB:EGRN	1.00	85.7%	26.4	26.4	0.0	–0.4	NM	NM
GB Sciences, Inc.	OTCQB:GBLX	0.24	56.4%	31.3	37.0	0.2	–10.3	NM	NM
General Cannabis Corp.	OTCQB:CANN	1.65	51.6%	37.1	39.5	0.1	–7.4	NM	NM
Green Spirit Industries Inc.	OTCPK:GSRX	5.75	77.0%	172.6	172.6	0.0	NA	NM	NM
GrowGeneration Corp.	OTCQX:GRWG	2.50	13.8%	41.1	39.3	13.1	–1.2	3.0	NM
Helix TCS, Inc.	OTCPK:HLIX	3.00	76.9%	85.9	86.7	3.5	–3.0	24.9	NM
HempTech Corporation	OTCPK:HTCO	1.82	83.9%	100.7	101.7	0.0	–0.5	NM	NM
iAnthus Capital Holdings, Inc.	OTCQB:ITHU.F	1.64	39.1%	61.7	74.3	0.1	NA	NM	NM
Kush Bottles, Inc.	OTCQB:KSHB	2.84	20.2%	170.4	170.2	18.8	0.8	9.1	NM
Leafbuyer Technologies, Inc.	OTCPK:LBUY	1.04	72.8%	39.9	39.8	0.9	NA	42.5	NM
Lexaria Bioscience Corp.	OTCQB:LXRP	0.82	18.8%	56.9	54.4	0.1	–1.8	NM	NM
Lifestyle Delivery Systems Inc	OTCQB:LDSY.F	0.50	25.6%	46.0	44.6	0.7	–5.1	65.3	NM
Marijuana Company of America	OTCPK:MCOA	0.03	76.8%	54.6	55.0	0.0	–21.9	NM	NM
MariMed Inc.	OTCQB:MRMD	0.70	16.3%	119.8	119.8	0.0	NA	NM	NM
mCig, Inc.	OTCQB:MCIG	0.17	66.1%	68.5	67.0	7.7	1.2	8.7	NM
Medical Marijuana, Inc.	OTCPK:MJNA	0.10	55.1%	307.1	317.7	8.0	–3.9	39.7	NM
Medicine Man Technologies, Inc.	OTCQB:MDCL	1.79	43.2%	39.2	39.0	2.4	–5.5	16.2	NM
OWC Pharmaceutical Research	OTCQB:OWCP	0.48	85.2%	70.1	69.0	0.1	–4.7	NM	NM
PharmaCyte Biotech, Inc.	OTCQB:PMCB	0.05	71.6%	46.7	42.4	0.0	NA	NM	NM
Player's Network, Inc.	OTCQB:PNTV	0.08	66.1%	45.0	45.9	0.2	–4.7	NM	NM
Praetorian Property, Inc.	OTCPK:PRRE	0.52	75.8%	81.1	93.5	14.1	NA	6.6	NM
SanSal Wellness Holdings, Inc.	OTCPK:SSWH	0.95	29.6%	55.9	57.4	0.6	–1.5	NM	NM
Stony Hill Corp.	OTCPK:STNY	2.50	50.0%	39.0	38.8	0.2	NA	NM	NM
Surna Inc.	OTCQB:SRNA	0.15	35.5%	29.6	28.3	6.9	–3.3	4.1	NM
Terra Tech Corp.	OTCQX:TRTC	0.20	42.1%	178.2	173.6	31.9	–18.6	5.4	NM
THC Therapeutics, Inc.	OTCPK:THCT	0.34	60.6%	39.7	39.7	0.0	0.0	NM	NM
The Tinley Beverage Company	OTCPK:QRSR.F	0.56	15.2%	41.4	38.8	0.1	NA	NM	NM
United Cannabis Corporation	OTCQB:CNAB	0.78	69.0%	46.7	46.0	0.5	NA	99.2	NM
Vitality Biopharma, Inc.	OTCQB:VBIO	1.85	56.4%	42.7	41.9	0.1	–4.3	NM	NM
WEED, Inc.	OTCPK:BUDZ	2.79	44.8%	279.0	278.5	0.0	–5.2	NM	NM
WOWI, Inc.	OTCPK:WOWU	1.65	67.0%	53.6	54.7	0.0	–26.0	NM	NM
		Median	**56.4%**	**$54.1**	**$54.5**	**$0.1**	**–$3.4**	**16.2x**	**NM**

Comparison of U.S. Stock Markets

U.S. stock markets vary significantly in terms of their financial, liquidity and corporate governance requirements. Most U.S. publicly traded cannabis-related companies trade on the OTC due to its less stringent requirements, as compared to Nasdaq and the NYSE. The following chart provides a comparison of Nasdaq, the NYSE and the OTC.

U.S. Stock Market Comparison

		Nasdaq	NYSE	OTC
Market Tiers		Nasdaq Global Select Market Nasdaq Global Market Nasdaq Capital Market	NYSE NYSE American	OTCQX OTCQB OTCPink
Number of Listed Companies	**Total**	3,200+	2,800+	10,300+
	Cannabis-related	4	3	212
Market Value[1]	**Total**	$11.3 trillion	$29.6 trillion	$247.7 billion
	Median	$334.0 million	$1.5 billion	$0.5 million
Listing or Trading Requirements		Must meet financial and liquidity criteria under at least one category of Standards. Criteria include: Stockholders' Equity, Market Capitalization, Operating History, Net Income, Amount of Publicly Held Shares and Number of Shareholders.	Must meet financial and liquidity criteria under at least one category of Standards. Criteria include: Stockholders' Equity, Market Capitalization, Pre-tax Income, Amount of Publicly Held Shares and Number of Shareholders.	OTCQX: Must meet minimum financial and liquidity criteria OTCQB and OTCPink: No financial and liquidity criteria
Minimum Share Price		Nasdaq Global Select Market: $4.00 Nasdaq Global Market: $4.00 Nasdaq Capital Market: $2.00	NYSE: $4.00 NYSE American: $2.00	OTCQX: $0.10 OTCQB: $0.01 OTCPink: None
Corporate Governance Requirements		• Annual audit • Audit committee and compensation committee • Majority of independent directors	• Annual audit • Audit committee and compensation committee • Majority of independent directors	OTCQX and OTCQB: • Annual audit • Audit committee • Two independent directors OTCPink: No requirements
Reporting Requirements		Required to file quarterly and annual reports	Required to file quarterly and annual reports	Not required to make regular filings
Registration Requirements		Required to register with the SEC	Required to register with the SEC	Not required to register with the SEC

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[1] *Source:* S&P Global Market Intelligence

Public Capital Markets: Canada

As of November 30, 2017, six cannabis-related companies were trading on the TSX, 20 were trading on the TSXV and 41 were trading on the CSE. Most of the publicly traded cannabis-related companies in Canada are licensed producers under Canada's Access to Cannabis for Medical Purposes Regulations, which allow a company to produce and sell medical cannabis products in Canada. A number of companies traded on the CSE also have cannabis-related operations in the United States. The following table provides a summary of cannabis-related companies traded on Canadian stock markets.

Summary of Canadian Publicly Traded Cannabis-Related Companies

(As of November 30, 2017)

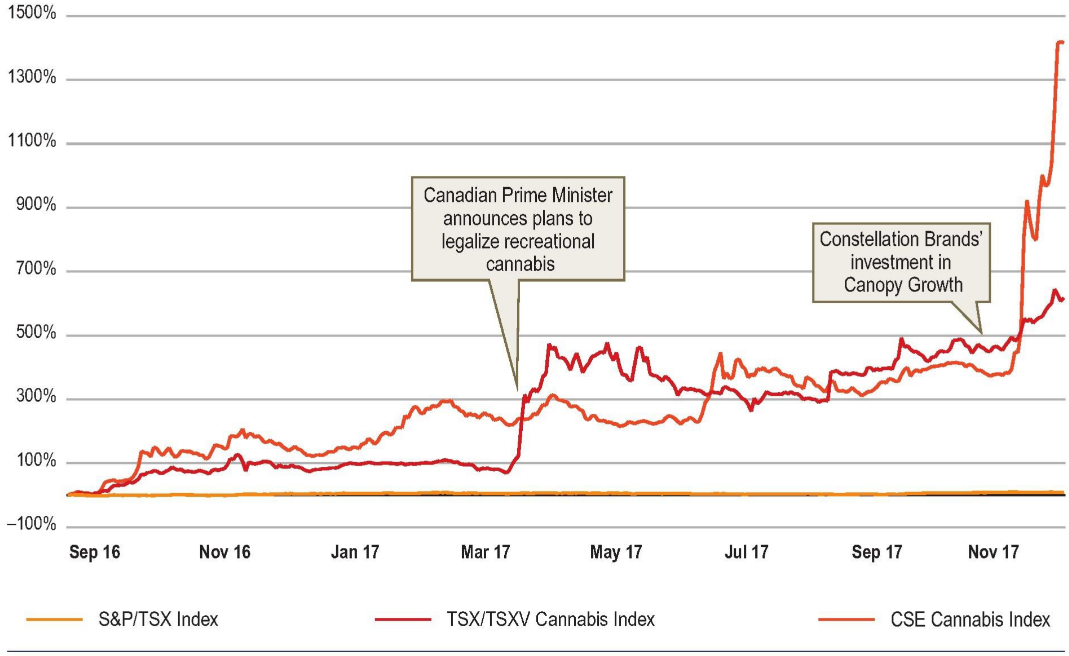
		Average ($U.S. millions)					
	Number of Companies	Market Value	Enterprise Value	Cash	Debt	LTM Revenue	LTM EBITDA
Toronto Stock Exchange (TSX)	6	$1,361.5	$1,311.4	$71.0	$20.8	$26.6	$0.8
TSX Venture Exchange (TSXV)	20	131.5	123.9	10.8	3.3	1.2	–3.5
Canadian Securities Exchange (CSE)	41	72.6	72.0	2.0	1.4	1.8	–2.8
Canada	67	$210.6	$203.3	$11.1	$3.8	$4.0	–$2.2

Source: S&P Global Market Intelligence. Companies that are traded on more than one market are included in their primary market as determined by S&P Global Market Intelligence, based on stock price history, trading volume and availability of estimates. Enterprise Value is defined as Market Value plus Debt minus Cash and Cash Equivalents. LTM is Last Twelve Months. EBITDA is defined as Earnings Before Interest, Taxes, Depreciation and Amortization.

Stock Price Performance of Canadian Publicly Traded Cannabis-Related Companies

The following chart shows the stock price performance of selected publicly traded cannabis-related companies in Canada since September 30, 2016. The chart indicates that the stock price performance of cannabis-related companies trading on Canadian markets received a boost from the announcement of the proposed recreational cannabis legislation in Canada by Prime Minister Justin Trudeau and, more recently, from Constellation Brands' investment in Canopy Growth.

Canadian Cannabis Stock Price Performance

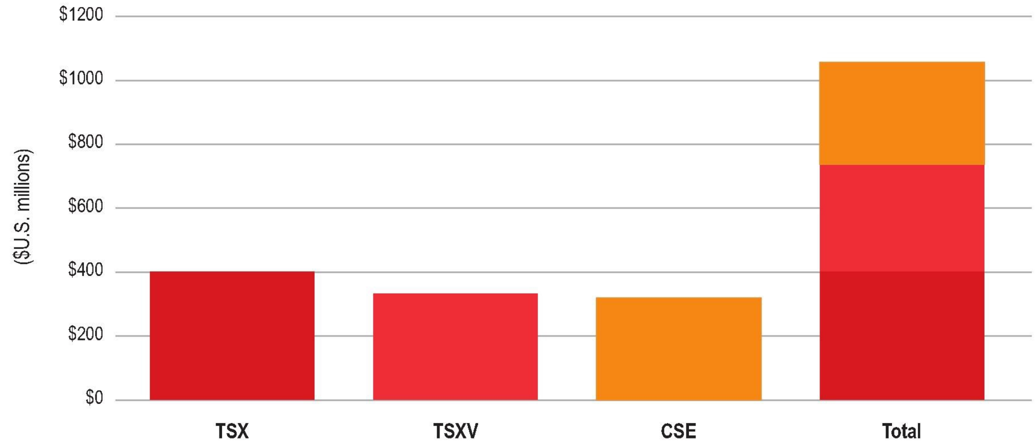


Source: S&P Global Market Intelligence

Capital Raised by Canadian Publicly Traded Cannabis-Related Companies

The following table shows the amount of capital (equity and debt) raised by cannabis-related companies traded on Canadian stock markets in the twelve months ended September 30, 2017.

Capital Raised by Canadian Publicly Traded Cannabis-Related Companies (LTM ended September 30, 2017)



	TSX	TSXV	CSE	Total
Amount Raised	$403	$334	$319	$1056
Number of Deals	11	21	28	60
Average Deal Size	$37	$16	$11	$18

Source: S&P Global Market Intelligence

Financial Data and Trading Multiples of Canadian Publicly Traded Cannabis-Related Companies

The following tables show selected financial and trading information of cannabis-related companies that are publicly traded on Canadian markets.

Toronto Stock Exchange

($U.S. millions, except stock price)

Company	Ticker	Stock Price 11/30/17	% Below 52-Week High	Market Value	Enterprise Value (EV)	LTM Revenue	LTM EBITDA	LTM EV Multiples		Forward Revenue Multiples		Forward EBITDA Multiples	
								Revenue	EBITDA	2018	2019	2018	2019
Aphria Inc.	TSX:APH	$8.91	9.9%	$1,350.2	$1,281.7	$17.7	$3.8	72.4x	NM	37.7x	9.9x	NM	27.5x
Aurora Cannabis Inc.	TSX:ACB	6.21	7.6%	2,483.5	2,406.8	18.6	–4.7	NM	NM	48.6	13.6	NM	30.4
CanniMed Therapeutics Inc.	TSX:CMED	15.15	10.9%	347.8	315.8	12.0	2.0	26.3	NM	10.6	5.4	48.5x	13.3
Canopy Growth Corporation	TSX:WEED	14.30	15.1%	2,720.6	2,641.7	46.3	1.9	57.1	NM	39.7	11.7	NM	NM
MedReleaf Corp.	TSX:LEAF	12.66	13.7%	1,146.2	1,094.8	32.9	9.7	33.3	NM	30.8	9.4	NM	27.0
Neptune Technologies & Bioressources Inc.	TSX:NEPT	1.54	15.0%	120.8	127.4	32.4	3.7	3.9	NM	6.0	4.3	NM	NM
		Median	**12.3%**	**$1,248.2**	**$1,188.3**	**$25.5**	**–$0.1**	**33.3x**	**NM**	**34.2x**	**9.6x**	**48.5x**	**27.3x**

TSX Venture Exchange

($U.S. millions, except stock price)

Company	Ticker	Stock Price 11/30/17	% Below 52-Week High	Market Value	Enterprise Value (EV)	LTM Revenue	LTM EBITDA	LTM EV Multiples		Forward Revenue Multiples		Forward EBITDA Multiples	
								Revenue	EBITDA	2018	2019	2018	2019
ABcann Global Corporation	TSXV:ABCN	$1.13	19.9%	$152.7	$129.7	$0.7	–$8.7	NM	NM	11.2x	2.6x	NM	9.2x
Cannabis Wheaton Income	TSXV:CBW	0.68	56.5%	157.2	157.0	0.1	–6.2	NM	NM	NA	NA	NA	NA
Cronos Group Inc.	TSXV:MJN	3.38	9.0%	503.2	494.0	2.3	2.5	NM	NM	16.1	5.8	NM	17.6
Delta 9 Cannabis Inc.	TSXV:NINE	2.37	23.8%	143.9	145.5	0.4	–1.7	NM	NM	NA	NA	NA	NA
Emblem Corp.	TSXV:EMC	1.26	64.6%	117.1	108.0	1.8	–7.5	59.4x	NM	10.5	2.0	NA	5.6
Emerald Health Therapeutics	TSXV:EMH	2.27	4.6%	213.8	195.6	0.6	–4.3	NM	NM	46.6	NA	NA	NA
Harvest One Cannabis Inc.	TSXV:HVST	0.71	18.6%	63.7	54.1	0.2	–4.5	NM	NM	17.0	1.8	NA	9.2
Hempco Food and Fiber Inc.	TSXV:HEMP	1.66	31.6%	77.5	77.4	4.7	–1.3	16.5	NM	NA	NA	NA	NA
ICC International Cannabis	TSXV:ICC	0.76	44.3%	104.6	102.5	0.1	–4.5	NM	NM	6.4	1.1	NM	4.0
Invictus MD Strategies Corp.	TSXV:IMH	1.12	33.6%	89.6	66.7	1.8	–10.3	37.6	NM	27.3	3.6	NM	13.3
LGC Capital Ltd.	TSXV:LG	0.29	24.0%	79.6	76.6	0.0	–1.7	NM	NM	NA	NA	NA	NA
Maple Leaf Green World Inc.	TSXV:MGW	0.46	24.4%	67.3	64.2	0.4	–1.1	NM	NM	NA	NA	NA	NA
National Access Clinic Corp.	TSXV:NAC	0.40	30.1%	24.0	25.0	0.7	–2.4	36.7	NM	NA	NA	NA	NA
Naturally Splendid Enter.	TSXV:NSP	0.21	45.0%	20.4	20.9	1.9	–4.3	10.9	NM	NA	NA	NA	NA
Newstrike Resources Ltd.	TSXV:HIP	0.39	16.7%	151.1	152.1	0.0	–0.3	NM	NM	NA	NA	NA	NA
OrganiGram Holdings Inc.	TSXV:OGI	2.61	15.7%	277.4	244.2	4.0	–5.2	60.7	NM	9.7	3.4	46.5x	12.6
Tetra Bio-Pharma Inc.	TSXV:TBP	0.54	14.8%	63.6	62.0	0.0	–3.9	NM	NM	NA	NA	NA	NA
The Hydropothecary Corp.	TSXV:THCX	1.92	17.7%	149.8	133.3	3.3	–0.6	40.7	NM	15.8	3.6	NM	29.8
Viridium Pacific Group Ltd.	TSXV:VIR	1.09	15.2%	49.5	48.6	0.0	–0.1	NM	NM	NA	NA	NA	NA
WeedMD Inc.	TSXV:WMD	1.69	12.8%	123.2	121.0	0.5	–3.1	NM	NM	9.9	2.3	NM	8.6
		Median	**21.8%**	**$110.8**	**$105.3**	**$0.5**	**–$2.0**	**37.6x**	**NM**	**13.5x**	**2.6x**	**46.5x**	**9.2x**

Source: S&P Global Market Intelligence. Not Meaningful (NM) used for negative multiples, and for revenue multiples greater than 100.0x and EBITDA multiples greater than 50.0x. Not Available (NA) used for information that is not available. Enterprise Value is defined as Market Value plus Debt minus Cash and Cash Equivalents. LTM is Last Twelve Months. EBITDA is defined as Earnings Before Interest, Taxes, Depreciation and Amortization.

Canadian Securities Exchange

($U.S. millions, except stock price)

								LTM EV Multiples		Forward Revenue Multiples		Forward EBITDA Multiples	
Company	**Ticker**	**Stock Price 11/30/17**	**% Below 52-Week High**	**Market Value**	**Enterprise Value (EV)**	**LTM Revenue**	**LTM EBITDA**	**Revenue**	**EBITDA**	**2018**	**2019**	**2018**	**2019**
Alliance Growers Corp.	CSE:ACG	$0.16	20.0%	$6.9	$6.8	$0.0	$0.0	NM	NM	5.0x	0.3x	NM	0.8x
Alternate Health Corp.	CSE:AHG	1.52	78.0%	79.3	76.6	10.3	–6.4	7.4x	NM	NA	NA	NA	NA
Beleave Inc.	CSE:BE	1.38	37.5%	44.8	44.1	0.0	–8.8	NM	NM	11.4	NA	NM	NA
Canada House Wellness Group Inc.	CSE:CHV	0.29	43.3%	35.6	36.3	4.4	–4.1	8.2	NM	NA	NA	NA	NA
CannaRoyalty Corp.	CSE:CRZ	2.28	41.2%	96.9	96.3	2.2	–8.6	44.2	NM	3.1	1.8	17.0x	8.1
CannTrust Holdings Inc.	CSE:TRST	5.43	12.5%	471.8	466.3	12.6	5.2	36.9	NM	9.0	5.5	31.8	20.6
DOJA Cannabis Company Limited	CSE:DOJA	1.06	8.7%	16.2	16.0	0.0	–0.1	NM	NM	NA	NA	NA	NA
Eviana Health Corporation	CSE:EHC	1.09	30.0%	16.7	17.2	0.0	0.0	NM	NM	NA	NA	NA	NA
Friday Night Inc.	CSE:TGIF	0.39	13.8%	60.3	61.2	0.8	–1.9	74.3	NM	NA	NA	NA	NA
Future Farm Technologies Inc.	CSE:FFT	0.37	23.8%	37.2	37.7	0.3	–7.5	NM	NM	NA	NA	NA	NA
International Cannabrands Inc.	CSE:JUJU.A	0.18	20.5%	1.8	2.4	0.2	–1.2	14.8	NM	NA	NA	NA	NA
Global Cannabis Applications Corp.	CSE:APP	0.26	20.9%	10.5	10.7	0.0	–1.1	NM	NM	NA	NA	NA	NA
Global Hemp Group Inc.	CSE:GHG	0.09	17.2%	14.3	14.4	0.0	0.0	NM	NM	NA	NA	NA	NA
Golden Leaf Holdings Ltd.	CSE:GLH	0.27	36.4%	110.1	115.5	7.9	–10.6	14.6	NM	NA	NA	NA	NA
HealthSpace Data Systems Ltd.	CSE:HS	0.08	23.1%	8.7	9.8	1.9	–1.5	5.1	NM	NA	NA	NA	NA
High Hampton Holdings Corp.	CSE:HC	0.30	22.0%	3.8	3.7	0.0	–0.3	NM	NM	NA	NA	NA	NA
InMed Pharmaceuticals Inc.	CSE:IN	0.52	30.2%	67.5	62.7	0.0	–4.6	NM	NM	NA	NA	NA	NA
Isodiol International Inc.	CSE:ISOL	1.14	18.8%	251.2	250.7	14.2	0.6	17.6	NM	NA	NA	NA	NA
Kaneh Bosm BioTechnology Inc.	CSE:KBB	0.06	37.5%	0.8	0.7	0.0	0.0	NM	NM	NA	NA	NA	NA
Liberty Health Sciences Inc.	CSE:LHS	1.33	33.2%	377.5	377.5	0.0	0.0	NM	NM	NA	NA	NA	NA
Liberty Leaf Holdings Ltd.	CSE:LIB	0.21	11.5%	20.2	19.7	0.0	–1.9	NM	NM	NA	NA	NA	NA
Lifestyle Delivery Systems Inc	CSE: LDS	0.50	26.4%	46.0	44.6	0.7	–5.1	65.3	NM	NA	NA	NA	NA
Lotus Ventures Inc.	CSE:J	0.40	16.1%	17.8	17.7	0.0	–0.5	NM	NM	NA	NA	NA	NA
Marapharm Ventures Inc.	CSE:MDM	0.76	44.6%	71.4	69.8	0.4	–3.6	NM	NM	NA	NA	NA	NA
Maricann Group Inc.	CSE:MARI	1.76	15.9%	162.7	162.2	3.1	–14.3	52.9	NM	9.8	2.0	NM	5.8
Matica Enterprises Inc.	CSE:MMJ	0.25	5.8%	57.1	56.0	0.0	–1.8	NM	NM	NA	NA	NA	NA
MPX Bioceutical Corporation	CSE:MPX	0.39	51.5%	100.7	108.0	10.6	–3.5	10.2	NM	5.2	2.9	NM	12.3
MYM Nutraceuticals Inc.	CSE:MYM	2.15	7.7%	200.8	200.4	0.3	–0.9	NM	NM	NA	NA	NA	NA
Platinex Inc.	CSE:PTX	0.10	28.9%	9.9	9.8	0.0	–0.7	NM	NM	NA	NA	NA	NA
PUF Ventures Inc.	CSE:PUF	0.79	11.3%	41.2	39.6	0.0	–1.2	NM	NM	NA	NA	NA	NA
Quadron Cannatech Corporation	CSE:QCC	0.19	44.4%	10.7	10.0	1.7	–0.7	6.0	NM	NA	NA	NA	NA
Quinsam Capital Corporation	CSE:QCA	0.34	24.1%	15.0	12.8	0.0	0.1	NM	NM	NA	NA	NA	NA
Ravenquest Biomed Inc.	CSE:RVT	0.03	47.1%	1.0	1.1	0.0	–0.2	NM	NM	NA	NA	NA	NA
Supreme Pharmaceuticals Inc.	CSE:SL	1.06	33.2%	219.3	202.5	1.2	–13.4	NM	NM	16.6	2.5	NM	7.8
TerrAscend Corp.	CSE:TER	1.33	13.6%	61.9	61.0	0.0	–4.3	NM	NM	NA	NA	NA	NA
THC Biomed Intl Ltd.	CSE:THC	0.59	33.9%	65.4	66.8	0.0	–1.2	NM	NM	NA	NA	NA	NA
True Leaf Medicine International Ltd.	CSE:MJ	0.69	9.2%	46.4	45.9	0.8	–2.4	56.9	NM	NA	NA	NA	NA
Valens Groworks Corp.	CSE:VGW	0.85	33.9%	52.0	51.8	0.0	–3.4	NM	NM	NA	NA	NA	NA
Veritas Pharma Inc.	CSE:VRT	0.69	5.3%	28.5	27.8	0.0	–2.4	NM	NM	NA	NA	NA	NA
Vodis Pharmaceuticals Inc.	CSE:VP	0.30	61.0%	9.2	10.7	0.0	–3.6	NM	NM	NA	NA	NA	NA
Wildflower Marijuana Inc.	CSE:SUN	0.52	46.0%	27.5	27.4	0.2	–0.8	NM	NM	NA	NA	NA	NA
		Median	**24.1%**	**$41.2**	**$39.6**	**$0.0**	**–$1.5**	**16.2x**	**NM**	**9.0x**	**2.2x**	**24.4x**	**8.0x**

Comparison of Canadian Stock Markets

Similar to stock markets in the United States, Canadian stock markets vary significantly in terms of their financial, liquidity and corporate governance requirements. Most Canadian publicly traded cannabis-related companies trade on the CSE due to its less stringent requirements, as compared to the TSX and TSXV. More than 10% of the companies traded on the CSE are cannabis-related companies. The following chart provides a comparison of the TSX, TSXV and CSE.

Canadian Stock Market Comparison

		Toronto Stock Exchange (TSX)	TSX Venture Exchange (TSXV)	Canadian Securities Exchange (CSE)
Number of Listed Companies	**Total**	1487	1791	337
	Cannabis-related	6	20	41
Market Value[1]	**Total ($U.S.)**	$2.0 trillion	$33.7 billion	$6.2 billion
	Median ($U.S.)	$282.6 million	$5.0 million	$6.1 million
Listing or Trading Requirements		Must meet financial and liquidity criteria determined by a company's industry.Criteria include: Earnings, Revenue, Cash Flow, Net Tangible Assets, Adequate Working Capital, Cash, Market Capitalization, Amount of Publicly Held Shares and Number of Shareholders.	Must meet financial and liquidity criteria determined by a company's industry.Criteria include: Net Tangible Assets, Revenue, Adequate Working Capital, Property, Operating History, Amount of Publicly Held Shares and Number of Shareholders.	Must meet financial and liquidity criteria determined by a company's industry and whether the company is an operating company. Criteria include: Revenue, Assets, Amount of Publicly Held Shares and Number of Shareholders.
Corporate Governance Requirements		• Annual audit • Audit committee • Two independent directors	• Annual audit • Audit committee • Two independent directors	• Annual audit • Audit committee
Reporting Requirements		Required to file quarterly and annual reports	Required to file quarterly and annual reports	Required to file quarterly and annual reports

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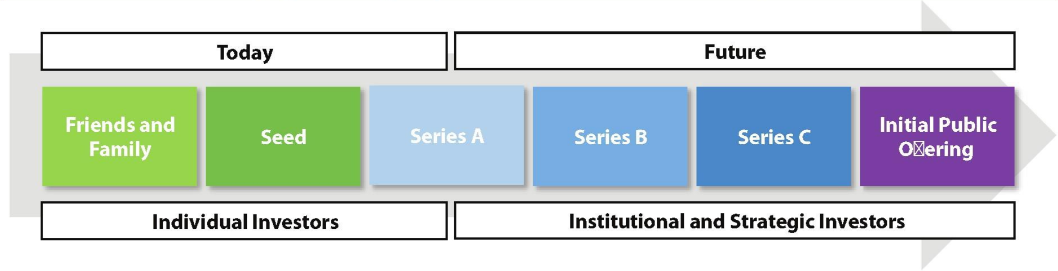
[1] *Source:* S&P Global Market Intelligence

Private Capital Markets

The cannabis industry today is replete with early-stage private companies seeking to raise capital. This capital, whether equity or debt, may be available from (i) "friends and family," (ii) more formalized groups and networks of "angel" investors, (iii) family offices, (iv) dedicated cannabis investment funds (currently few in number, but growing), and (v) strategic investors. However, because of the legal considerations, traditional institutional investors—most notably the venture capital and private equity communities—continue to be mostly absent from the market.

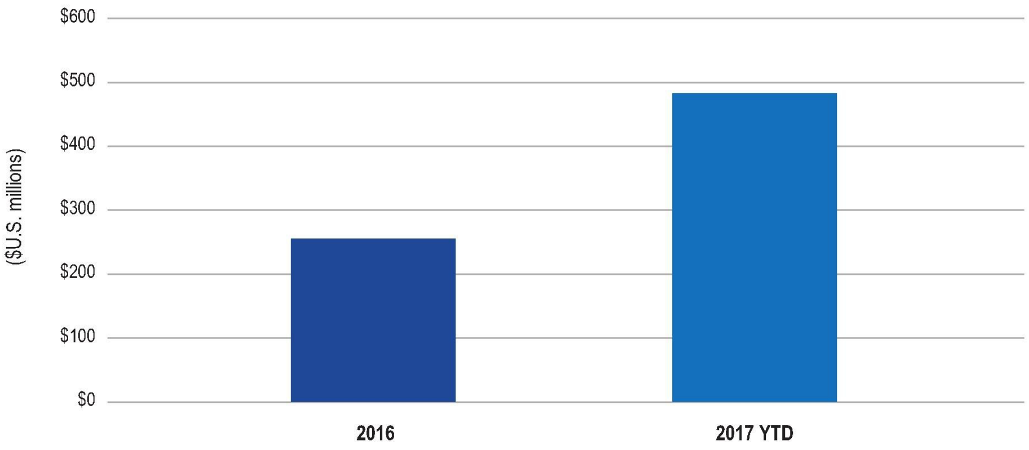
As with most early-stage companies in other industries, many emerging cannabis-related companies are trying to follow the typical progression of raising equity capital, as illustrated in the following chart.

Equity Financing Progression for Cannabis-Related Companies



The following table provides a summary of the reported capital (equity and debt) raised by private cannabis-related companies in 2016 and year to date through November 30, 2017. While the table indicates that significant capital is available in the private markets, we believe that the dearth of accessible institutional capital makes it challenging for many companies to raise subsequent rounds of financing after successfully securing their start-up capital. In addition, the amount raised per transaction is small and there have been very few announced financings of meaningful size by private companies. While we believe that the data is informative, it is challenging to get accurate and comprehensive data for the number and dollar amount of transactions that occur in private markets within the cannabis industry because of the number of transactions that are not reported.

Total Capital Raised by Private Cannabis-Related Companies Globally



	2016	2017 YTD
Amount Raised	$256	$483
Number of Deals	65	102
Average Deal Size	$4	$5

Source: Ackrell Capital

The following table shows the scarcity of large transactions announced by private cannabis-related companies for the year to date through November 30, 2017.

Selected Financings by Private Cannabis-Related Companies (YTD through November 30, 2017)

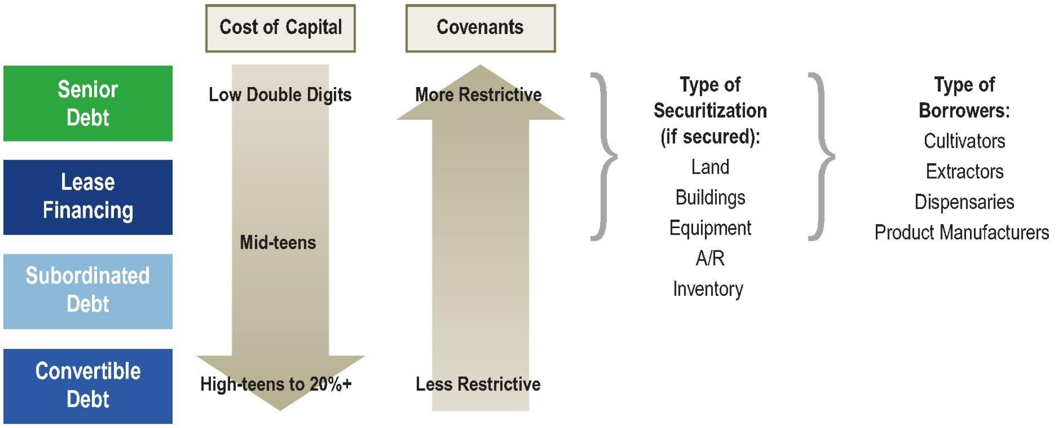
($U.S. millions)

Issuer	Amount	Date
düber Technologies Inc.	$50.0	September 2017
Eaze Solutions, Inc.	27.0	September 2017
Surterra Holdings LLC	13.4	September 2017
Teewinot Life Sciences Corporation	12.3	April 2017
Hound Labs, Inc.	8.1	May 2017
iUNU, Inc.	6.3	August 2017
Green Leaf Medical, LLC	5.9	June 2017
RX Green Solutions LLC	5.3	July 2017
River Collective	5.0	April 2017
Greene Fox Enterprises	5.0	May 2017

In addition, an increasing number of direct lenders are participating in the private debt markets for cannabis-related companies. These lenders represent an important capital source for the industry, as typical forms of debt capital, such as bank financing, remain unavailable to most companies. As in other industries, debt financing is typically available only to those companies having meaningful cash flow or tangible assets to secure the debt. While the number of lenders is increasing, there is still a relative scarcity of debt capital available to the cannabis industry, which can lead to a higher debt cost of capital of 200–500 basis points or more for cannabis-related companies, as compared to companies in other industries.

The following chart illustrates the type of debt that may be available to cannabis-related companies, representative terms of such debt, and the types of companies that may be able to access debt in the private markets.

Debt Financing Alternatives for Cannabis-Related Companies


Cost of Capital
Covenants
Senior Debt
Lease Financing
Subordinated Debt
Convertible Debt
Low Double Digits
Mid-teens
High-teens to 20%+
More Restrictive
Less Restrictive
Type of Securitization (if secured):
Land
Buildings
Equipment
A/R
Inventory
Type of Borrowers:
Cultivators
Extractors
Dispensaries
Product Manufacturers

Final Thoughts

As stated previously, valuations and stock price fluctuations in the cannabis industry continue to be driven more by expectations for the cannabis industry in general than by individual company fundamentals. Today, in the public markets, trading volumes are too low, trading prices are too volatile and operating histories are too limited to place any reliance on current valuation levels in the cannabis industry. We believe that this dynamic will continue until cannabis-related companies have matured and start to realize meaningful revenue, profitability and other financial metrics that will allow investors to evaluate companies within the industry by more traditional methodology.

It is still too early to know how the cannabis industry or its sectors will be valued in the future. It may come to pass that companies in the cannabis industry are valued comparably to public companies in industries with similar characteristics, such as the alcohol, tobacco, pharmaceutical and consumer products industries, especially as companies from those industries look to enter the cannabis industry, through acquisition or by other means.

As demonstrated by the more than $2.0 billion raised by publicly traded and private cannabis-related companies in 2017, capital continues to be available to support the growth of the industry. In the public markets, we believe that Canadian stock markets will continue to be the most receptive globally (until more progress is made in the United States toward federal legalization of cannabis).

Overview of Canadian and U.S. Stock Markets

	Canada			United States	
	Toronto Stock Exchange (TSX)	**TSX Venture Exchange (TSXV)**	**Canadian Securities Exchange (CSE)**	**Nasdaq/NYSE**	**OTC**
Summary	Largest exchange in Canada and one of world's largest	Affiliate of the TSX for smaller capitalization companies	Perceived as the "OTC" of the Canadian markets by many investors	Largest and most recognized stock exchanges in the world	Negative reputation with many investors and regulators
Benefits	High volume of trading and liquidity; brand recognition; strong institutional support	Possible uplisting to the TSX; better brand than the CSE	Receptive to companies with U.S. cannabis operations; very few listing requirements	High volume of trading and liquidity; brand recognition; strong institutional support	Possible uplisting to other markets; very few requirements to trade
Issues	Not receptive to companies that violate U.S. federal law	Not receptive to companies that violate U.S. federal law; limited liquidity for small issues	Limited trading volume and liquidity; significant price fluctuations; limited institutional support	Stringent listing requirements	Limited trading volume and liquidity; significant price fluctuations; limited institutional support
Outlook	Expected to continue to attract the largest Canadian companies in the cannabis industry	Viable exchange for smaller Canadian companies with no cannabis operations in the United States	Viable exchange for smaller Canadian companies with cannabis operations in the United States	With few exceptions, cannabis companies will not be able to list while federal prohibition continues	Cannabis companies will continue to trade on the OTC despite the limited benefits

Although capital continues to be available for select issuers in both the public and private markets, we believe that the cannabis industry will continue to face a large funding gap for the foreseeable future, driven by the lack of institutional investors. However, we believe a growing number of retail, institutional and family office investors will support the industry in 2018 and beyond.

CHAPTER VIII

Top 100
Private Cannabis Companies 2018

In this chapter, we present our current list of the Top 100 Private Cannabis Companies. Our determination to include companies on the list is subjective, and the list is intended to be a cross-section of the types of companies in the cannabis industry. Our list comprises privately held companies, primarily U.S. companies, companies we believe have a strong reputation or position in their market segments and companies pursuing a line of business we consider promising. We intend to update our list periodically, and we expect it may change significantly over time.

Most companies on our list are in early stages of development, and many will need to raise capital to succeed. Raising capital for early-stage companies in any industry is extremely challenging. Early-stage cannabis companies seeking capital face the same challenges as early-stage companies in other industries but must also address challenges unique to the cannabis industry. Although we hope the companies on our list ultimately succeed, we expect some will go out of business for any number of reasons, including lack of access to capital.

Inclusion in our list does not represent an investment recommendation or endorsement of any particular company or product. We have made investments in and conducted investment banking and other services for companies included in the *Top 100 Private Cannabis Companies 2018* list, and may do so in the future. Readers should be aware that we may have a conflict of interest that could affect the objectivity of our decision to include a company in the list. For additional disclosures and disclaimers, see page 175.

Top 100 Private Cannabis Companies 2018

AEssenseGrows
Ample Organics
Apeks Supercritical
The Apothecarium
Auntie Dolores
Baker Technologies
BAS Research
BDS Analytics
Beboe
Berkeley Patients Group
BioTrackTHC
Bloom Farms
Brewbudz
Bud and Bloom
Calyx Brands
Cannabis Reports
CannaCraft
CannaKorp
Colorado Harvest Company
Columbia Care
Confident Cannabis
Cultivation Technologies
Cura Cannabis Solutions
CW Analytical
Deep Cell
Défoncé
Dixie Elixirs
Dosist
Eaze Solutions
Eel River Organics
Elemental Wellness
Euflora
Evolve Therapeutics
Evoxe Laboratories
Flow Kana
Flowhub
FunkSac
Garden State Dispensary
GFarmaLabs
Gold Coast Extracts
Green Dot Labs
Green Flower Media
Green Rush
The Green Solution
Harborside Health Center
Harvest
Headset
HelloMD
Humboldt Legends
Incense Specialties
Jetty Extracts
Kikoko
KIVA Confections
Korova
LeafLink
Leafly
Level Blends
LivWell Enlightened Health
Lunchbox Alchemy
Mary's Medicinals
Meadow
Merry Jane
MiNDFUL
MJ Freeway
MJardin
MM Acquisition Co.
Native Roots
New Vansterdam
Northwest Cannabis Solutions
NWT Holdings (Firefly)
Organa Brands
PAX Labs
PharmaCielo
PRØHBTD Media
Qind
River Collective
Rubicon Organics
S2S Development
SC Laboratories
Scrubbed
SPARC
Spectrum King
Steep Hill Labs
StickyGuide
Strainz
Teewinot Life Sciences
Tikun Olam
Treez
Trellis
Trulieve
Utopia Farms
VapeWorld
Vapexhale
VCC Brands
Vuber
Wana Brands
Web Joint
Weedguide
Weedmaps
Wellness Connection of Maine

AEssenseGrows

Sunnyvale, California
www.aessensegrows.com

AEssenseGrows is a producer of modular aeroponic systems for cannabis cultivation. The company develops full-scale cultivation systems equipped with software, automation and monitoring capabilities. Such systems enable cultivators to deliver nutrients to the plant more efficiently, and thus generate higher-yielding output than conventional cultivation systems.

Ample Organics

Toronto, Ontario
www.ampleorganics.com

Ample Organics is a software developer for cannabis cultivators. The company offers a system to track all aspects of the cannabis cultivation business. The company's products enable medical cannabis producers in Canada to comply with Canadian law.

Apeks Supercritical

Johnstown, Ohio
www.apekssupercritical.com

Apeks Supercritical is a provider of botanical oil extraction systems that utilize subcritical and supercritical CO_2 gas as a solvent. The company's fully automated systems range from a 1-liter benchtop system to a 40-liter production system. These systems provide consistent extraction results for the production of cannabis concentrates.

The Apothecarium

San Francisco, California
www.apothecarium.com

The Apothecarium is an operator of recreational and medicinal cannabis dispensaries. The company offers cannabis flower, concentrates, edibles and accessories throughout its locations in California and Nevada.

Auntie Dolores

Oakland, California
www.auntiedolores.com

Auntie Dolores is a producer of branded cannabis-infused edibles. The company produces a variety of edibles, including pretzels, biscuits, brownies, cookies, corn and nuts. The company's products are sold directly to cannabis consumers and through cannabis dispensaries in California.

Baker Technologies

Denver, Colorado
www.trybaker.com

Baker Technologies provides a customer relationship management platform for cannabis dispensaries and brands. The company provides messaging, loyalty programs and online ordering features to enable cannabis dispensaries to attract and retain cannabis consumers.

BAS Research

Berkeley, California
www.basresearch.com

BAS Research is a cannabis research and manufacturing company. The company provides its clients with bulk cannabis oil, cannabis-oil extraction consulting services, contract manufacturing and fulfillment.

BDS Analytics

Boulder, Colorado
www.bdsanalytics.com

BDS Analytics is a provider of data analytics solutions to the cannabis industry. The company tracks data from point-of-sale systems to provide insight into consumer buying patterns. The company sells its solutions to a wide range of customers.

Beboe

Los Angeles, California
www.beboe.com

Beboe is a producer of branded cannabis products. The company's cannabis oil vaporizers and cannabis-infused edibles are available in dispensaries throughout California.

Berkeley Patients Group

Berkeley, California
www.mybpg.com

Berkeley Patients Group is an operator of a cannabis dispensary. The company retails a broad variety of cannabis products, including flower, pre-rolls, concentrates, edibles, topicals, seeds and accessories. It also operates an online e-commerce portal and offers a limited same-day delivery service to patients in Berkeley, California and the surrounding area.

BioTrackTHC

Ft. Lauderdale, Florida
www.biotrack.com

BioTrackTHC is a provider of compliance and business management software for the retail cannabis industry. The company's software platform is designed for inventory and sales management to track the seed-to-sale process and is used by recreational and medicinal dispensaries, cultivators and state governments.

Bloom Farms

San Francisco, California
www.getbloomfarms.com

Bloom Farms is a producer of branded cannabis products, including cannabis oil and flower. The company's products are available in dispensaries throughout California.

Brewbudz

San Diego, California
www.brewbudz.us

Brewbudz is a manufacturer of branded cannabis-infused products. The company develops cannabis-infused coffee, tea and cocoa pods that can be used in Keurig® systems. Its products are available in select dispensaries in Nevada.

Bud and Bloom

Santa Ana, California
www.budandbloomoc.com

Bud and Bloom is the operator of a cannabis dispensary. The company offers cannabis flower, concentrates, edibles and accessories and sells these products at its Santa Ana location.

Calyx Brands

Oakland, California
www.gocalyx.com

Calyx Brands is a cannabis distribution company. The company engages in the distribution, transportation and marketing of cannabis products.

Cannabis Reports

Berkeley, California
www.cannabisreports.com

Cannabis Reports is a publisher of industry data for cannabis users and business owners. The company offers news, studies, product information and dispensary information.

CannaCraft

Santa Rosa, California
www.cannacraft.com

CannaCraft is a producer of branded strain-specific cannabis concentrates and cannabis-infused edibles. The company provides a range of high-THC products, including concentrate cartridges, oils, softgels, sprays and straws. It focuses on providing concentrates of the most popular cannabis flower strains. Products are sold through cannabis dispensaries in California. The company manufactures its products under the AbsoluteXtracts, Care By Design and Satori brands.

Colorado Harvest Company

Denver, Colorado
www.coloradoharvestcompany.com

Colorado Harvest Company is an operator of recreational and medicinal cannabis dispensaries and cultivation facilities. The company's three dispensary locations retail flower, concentrates and edibles. It also operates an indoor hydroponic grow facility.

CannaKorp

Boston, Massachusetts
www.cannakorp.com

CannaKorp is a manufacturer of branded cannabis consumer products. The company produces the CannaCloud, a tabletop vaporizer system utilizing single-use cannabis-infused pods.

Columbia Care

New York, New York
www.col-care.com

Columbia Care is an operator of medical cannabis dispensaries and cultivation facilities. The company operates 27 medical dispensaries across 9 states and the District of Columbia under several brands, including Columbia Care, Curative Health, Patriot Care and SWC Arizona.

Confident Cannabis

Palo Alto, California
www.confidentcannabis.com

Confident Cannabis is a cannabis lab-testing and analytics company. The company allows users to view the results of their product testing and analytics in an online platform. Its technology can be integrated into dispensary websites.

Cultivation Technologies

Coachella, CA
www.cultivationtech.com

Cultivation Technologies provides infrastructure, genetics, technology and branding to the legal cannabis industry. The company is building a campus for the development of pharmaceutical-grade cannabis products.

Cura Cannabis Solutions

Portland, Oregon
www.curacan.com

Cura Cannabis Solutions is a provider of cannabis concentrates. The company offers cannabis distillates and oils to consumers and edibles manufacturers. Its products are available in dispensaries throughout California, Nevada and Oregon.

CW Analytical

Oakland, California
www.cwanalytical.com

CW Analytical is a cannabis lab-testing company that tests cannabis and cannabis-based products for potency, pesticides and microbiology. The company also consults with dispensaries and edibles manufacturers to provide best practices for product handling and product labeling.

Deep Cell

Seattle, Washington
www.deepcell.industries

Deep Cell is a synthetic biology and cannabis intellectual property holding company. The company provides licenses to companies who wish to produce Deep Cell's cannabis-infused sugar. Its products are available from Deep Cell licensees.

Défoncé

Oakland, California
www.defonce.com

Défoncé is a producer of branded cannabis-infused products, primarily focusing on chocolate-based edibles. The company offers a wide range of chocolate-bar flavors that are available in dispensaries located throughout California.

Dixie Elixirs

Denver, Colorado
www.dixieelixirs.com

Dixie Elixirs is a producer of branded cannabis-infused edibles. The company produces a wide range of products, including chocolate-based edibles, beverages, capsules, mints, energy shots, topicals and disposable vaporizer pens. The company's products are sold in many dispensaries throughout California and Colorado.

Dosist

Los Angeles, California
www.dosist.com

Dosist is a producer of cannabis vaporizers. The company develops pre-filled cannabis vaporizers that are designed to provide consumers with a specific mood. The company's products are available in dispensaries located throughout California.

Eaze Solutions

San Francisco, California
www.eaze.com

Eaze Solutions is a developer and provider of an on-demand cannabis delivery-service application that enables consumers to order cannabis products via mobile devices. The company's mobile application allows users to access a daily menu of cannabis products for purchase and direct-to-consumer delivery.

Eel River Organics

Sacramento, California
www.eelriverfamilyfarm.com

Eel River Organics is a producer of branded cannabis products from Humboldt County, California. The company offers cannabis flower, concentrates, vaporizer cartridges and cultivation equipment. Its products are available in select California dispensaries.

Elemental Wellness

San Jose, California
www.elementalwellnesscenter.com

Elemental Wellness is an operator of a cannabis dispensary and wellness center in San Jose, California. The company offers a range of cannabis flower, concentrates and edibles, as well as delivery services and a range of wellness classes.

Euflora

Denver, Colorado
www.eufloracolorado.com

Euflora is an operator of four recreational cannabis dispensaries in Colorado. The company's locations sell flower, pre-rolls, concentrates, topicals, seeds, vaporitzers and branded accssories. The company also cultivates numerous cannabis strains in its own grow facility.

Evolve Therapeutics

San Francisco, California
www.evolvetherapeutics.com

Evolve Therapeutics is a biopharmaceutical company focused on the research and manufacture of cannabinoid-based medications. The company produces a variety of cannabis products that are available in dispensaries located throughout California.

Evoxe Laboratories

Oakland, California
www.evoxelabs.com

Evoxe Laboratories is a producer of cannabis vaporizers. The company develops pre-filled cannabis vaporizers that are designed to provide consumers with a specific mood. The company's products are available in dispensaries throughout California.

Flow Kana

San Francisco, California
www.flowkana.com

Flow Kana is a producer of cannabis flower. The company owns property in Mendocino County, where it plans to partner with small cultivators to create an institute for cannabis manufacturing, education and leisure.

Flowhub

Denver, Colorado
www.flowhub.co

Flowhub is a provider of inventory management software for the cannabis industry. The company provides software to aid cultivators and dispensary operators in tracking their business from seed to sale. The software is designed to aid customers in compliance.

FunkSac

Denver, Colorado
www.funksac.com

FunkSac is a provider of compliant packaging solutions for the medicinal and recreational cannabis industry. The company has a comprehensive product line manufactured with FDA-approved material and eco-friendly cannabis packaging solutions that are highly secure. FunkSac retails its products to cultivators, dispensaries and edibles manufacturers.

Garden State Dispensary

Woodbridge, New Jersey
www.gardenstatedispensary.com

Garden State Dispensary is a medicinal cannabis dispensary located in New Jersey. The company produces its own medical cannabis and offers a patient research and counseling program.

GFarmaLabs

Anaheim, California
www.gfarmalabs.com

GFarmaLabs is a producer of branded cannabis, cannabis-infused edibles, cannabis concentrates and vaporizer accessories. The company produces pre-rolls, beverages, chocolate-based edibles, honey, concentrate cartridges and injectors. GFarmaLabs sells its products through dispensaries in California and Washington. Its products are marketed as being produced from "100% indoor flower."

Gold Coast Extracts

Los Angeles, California
www.goldcoastusa.com

Gold Coast Extracts is an extraction consultant and producer of branded cannabis concentrates. The company provides extraction consulting services to cultivators and concentrates producers. It also produces an award-winning line of branded cannabis concentrates in shatter and wax form. The company's products are sold in dispensaries throughout California.

Green Dot Labs

Boulder, Colorado
www.greendotlabs.com

Green Dot Labs is a cultivation and extraction company that provides branded concentrates to consumers. The company operates an indoor hydrocarbon extraction facility and utilizes proprietary cannabis-flower genetics to produce whole-plant extracts. The company's products are available in dispensaries throughout Colorado.

Green Flower Media

Ventura, California
www.learngreenflower.com

Green Flower Media is a digital media company operating a website that offers cannabis industry information. The company offers online classes to customers who are interested in learning about all things cannabis-related. The company's website also offers informational live streams from industry professionals.

Green Rush

San Mateo, California
www.greenrush.com

Green Rush provides an online medical cannabis delivery service. The company offers a range of cannabis flower, concentrates, edibles, tinctures and accessories. It has partnered with hundreds of cannabis dispensaries in California, Colorado, Nevada, New York and Michigan.

The Green Solution

Denver, Colorado
www.tgscolorado.com

The Green Solution is an operator of medicinal and recreational cannabis dispensaries. The company's 15 locations retail flower, pre-rolls, concentrates, edibles, topicals, seeds, vaporizers and branded accessories. The company also produces its own line of branded concentrates and edibles.

Harborside Health Center

Oakland, California
www.shopharborside.com

Harborside Health Center operates cannabis dispensaries. The company's two locations retail flower, pre-rolls, concentrates, edibles, seeds, topicals and accessories. The company sources cannabis-flower products from local cultivators.

Harvest

San Francisco, California
www.harvestshop.com

Harvest is an operator of cannabis dispensaries. In addition to offering a full range of cannabis products, the company's dispensaries also serve as smoking lounges. The company has two locations in San Francisco.

Headset

Seattle, Washington
www.headset.io

Headset is a data analytics company for businesses within the cannabis industry. The company offers a SaaS product that tracks market data, business intelligence and retailer-direct data with clients located in states where cannabis has been legalized.

HelloMD

San Francisco, California
www.hellomd.com

HelloMD provides a digital healthcare platform. The company provides prescriptions for medicinal-cannabis patients via online, live video consultations. The company also provides a dispensary locator and cannabis product reviews.

Humboldt Legends

Trinidad, California
www.humboldtlegends.com

Humboldt Legends is a producer of cannabis flower products sourced from Humboldt County, California. The company offers cannabis flower in eighths and pre-rolls. The company's products are available in dispensaries throughout California.

Jetty Extracts

Oakland, California
www.jettyextracts.com

Jetty Extracts is a producer of cannabis vaporizers and cannabis concentrates. The company develops pre-filled cannabis vaporizers, cartridges and wax that offer the consumer formulations of both THC and CBD. The company's products are available in dispensaries throughout California.

Incense Specialties

Lake Worth, Florida
www.thisthingrips.com

Incense Specialties is a producer of cannabis vaporizers. The company designs and manufactures a line of vaporizer pens under the brand name "This Thing Rips." The company's products are available in more than 4,000 points of sale across the United States and Canada.

Kikoko

San Francisco, California
www.kikoko.com

Kikoko is a producer of branded cannabis-infused teas. The company offers a range of THC and CBD teas. Kikoko products are available in select California dispensaries.

KIVA Confections

San Leandro, California
www.kivaconfections.com

KIVA Confections is a producer of branded cannabis-infused edibles. The company's award-winning products are sold through cannabis dispensaries in California and Colorado.

Korova

Oakland, California
www.korovaedibles.com

Korova is a producer of branded cannabis-infused edibles. The company offers a selection of cannabis-infused cookies and brownies at varying potencies. The company's products are available in dispensaries located in California, Arizona and Nevada.

LeafLink

New York, New York
www.leaflink.com

LeafLink provides a software platform to facilitate e-commerce B2B sales, CRM and order fulfillment tracking of products for cannabis brands and dispensaries.

Leafly

Seattle, Washington
www.leafly.com

Leafly is a digital media company. Its online directory and content platform for cannabis consumers provides information about locations of dispensaries, news pertaining to the cannabis industry and the effects of different cannabis strains.

Level Blends

San Francisco, California
www.levelblends.com

Level Blends is a producer of branded cannabis concentrates. The company utilizes a proprietary extraction process to produce a line of branded concentrates for use in vaporizers. The company's products are available in dispensaries throughout California.

LivWell Enlightened Health

Denver, Colorado
www.livwell.com

LivWell Enlightened Health is an operator of medicinal and recreational cannabis dispensaries and cultivation facilities. The company operates 15 retail locations in Colorado and Oregon and sells flower, pre-rolls, concentrates, edibles, topicals and branded accessories. It also operates an indoor cultivation facility and is recognized as the largest cannabis-sector employer in Colorado.

Lunchbox Alchemy

Bend, Oregon
www.lunchboxalchemy.com

Lunchbox Alchemy is a producer of branded cannabis-infused edibles and cannabis concentrates. The company produces cannabis-infused candies and macaroons, concentrate cartridges and ethanol tinctures. Its products are available in dispensaries throughout Oregon.

Mary's Medicinals

Denver, CO
www.marysmedicinals.com

Mary's Medicinals is a producer of branded cannabis concentrates. The company provides a range of transdermal patches and pens, topicals and powders featuring cannabinoid-based concentrates. The company's award-winning products deliver cannabinoids, including THC and CBD as well as THCA, CBN and CBC.

Meadow

San Francisco, California
www.getmeadow.com

Meadow is a developer and provider of an on-demand cannabis delivery-service application for dispensaries. The company markets online and mobile-ordering applications for dispensaries. The web and mobile applications allow users to access a menu of cannabis products for purchase and direct-to-consumer delivery through dispensaries.

MiNDFUL

Denver, Colorado
www.bemindful.today

MiNDFUL is an operator of recreational and medicinal cannabis dispensaries. The company operates five retail locations in Colorado and a single location in Illinois. The company sells flower, concentrates, edibles, topicals and branded accessories.

Merry Jane

Los Angeles, California
www.merryjane.com

Merry Jane is a digital media company focused on the cannabis industry. The company's website provides commentary on recent events, pop culture, business, politics and health-related news. The company provides strain reviews and information, as well as a dispensary locator.

MJ Freeway

Denver, Colorado
www.mjfreeway.com

MJ Freeway is a provider of enterprise management software for the cannabis industry. The company's core solution is a software platform for inventory and sales management to track the seed-to-sale process in compliance with state requirements. The software is used by recreational and medicinal dispensaries, infused-product manufacturers and cultivators.

MJardin

Denver, Colorado
www.mjardin.com

MJardin is a provider of cannabis cultivation management services. The company offers facility design, inventory tracking, and management and operational consulting services. The company's services are available in states having medical or recreational laws.

MM Acquisition Co.

Los Angeles, California

MM Acquisition Co. is a provider of turnkey real estate services and business services to cannabis cultivators and dispensary operators in California. The company operates in three business segments: Property Leasing Business, Services Business and Other Related Businesses.

Native Roots

Denver, Colorado
www.nativeroots303.com

Native Roots is an operator of medicinal and recreational cannabis dispensaries and cultivation facilities. The company operates 21 dispensaries and retails flower, pre-rolls, concentrates, edibles and vaporizer accessories. The company also sells a line of branded hash-oil concentrates under the "Native Roots Extracts" brand. It operates an indoor cultivation facility and has won numerous industry awards for the operation.

New Vansterdam

Vancouver, Washington
www.newvansterdam.com

New Vansterdam is an operator of a cannabis dispensary in Washington. The company offers a selection of cannabis flower, concentrates, edibles and topicals. It also offers online ordering.

Northwest Cannabis Solutions

Olympia, Washington
www.nwcs425.com

Northwest Cannabis Solutions is a manufacturer of white-label cannabis products. The company offers cannabis flower cultivation, extraction and infused edibles. It supplies dispensaries throughout Washington.

NWT Holdings (Firefly)

San Francisco, California
www.thefirefly.com

NWT Holdings is a vaporizer technology company. The company designs and manufactures branded convective-heating vaporizers under the "Firefly" brand. Its portable vaporizer is designed for use with concentrates and flower.

Organa Brands

Denver, Colorado
www.organabrands.com

Organa Brands is a manufacturer and distributor of cannabis products and vaporizers. The company manufactures and retails its products under the Organa Labs, O.penVAPE, Bakked, Magic Buzz and District Edibles brands. The company's products are distributed through 1,200 dispensaries across ten states.

PAX Labs

San Francisco, California
www.paxvapor.com

PAX Labs is a vaporizer technology company that designs and manufactures branded vaporizers that use conductive heating. The company's portable vaporizers are designed for use with concentrates and flower.

PharmaCielo

Rionegro, Colombia
www.pharmacielo.com

PharmaCielo is an emerging global supplier of naturally grown and processed, standardized medicinal-grade cannabis extracts. The company holds the first cannabis-processing license issued under the legal framework of Colombia's cannabis laws and has one of the largest cultivation platforms in the cannabis industry, with more than 14.6 million square feet of company-owned or contracted open-air greenhouses in Colombia, South America.

PRØHBTD Media

Los Angeles, California
www.prohbtd.com

PRØHBTD Media is a vertically integrated digital media company. The company provides digital agency services to cannabis brands, maintains a cannabis-related art, music, video, fashion, travel and lifestyle website and develops original media content focused on the cannabis industry.

Qind

San Francisco, California
www.qind.com

Qind is a producer and distributor of branded cannabis products, including flower, concentrates, edibles and other infused products. The company sells directly to consumers through in-home events, e-commerce and next-day home delivery. The company also provides educational materials and content to its customers through its social network.

River Collective

Sacramento, California
www.rvrdc.com

River Collective is a distribution company for branded cannabis products. The company partners with businesses throughout California that produce cannabis flower, concentrates and edibles.

Rubicon Organics

Bellingham, Washington
www.rubiconorganics.com

Rubicon Organics is a licensed cannabis cultivator specializing in the growing, processing, packaging and marketing of cannabis. The company is developing greenhouses in Washington and California.

S2S Development

San Francisco, California
www.s2s-inc.com

S2S Development is a contract manufacturer and distributor of cannabis products. The company provides manufacturing, co-packing, testing and distribution services to cannabis companies.

SC Laboratories

Santa Cruz, California
www.sclabs.com

SC Laboratories is a cannabis lab-testing company. The company tests cannabis and cannabis-based products for potency, pesticides and microbiology, adhering to FDA and other guidelines in its testing. The company also provides consulting services to cultivators, dispensaries and producers of cannabis-infused edibles to implement industry best practices.

Scrubbed

San Francisco, California
www.scrubbed.net

Scrubbed is an outsourced bookkeeping, accounting and tax firm serving the cannabis industry. The company has a dedicated cannabis practice that provides clients with comprehensive turnkey accounting and tax solutions.

SPARC

San Francisco, California
www.sparcsf.com

SPARC operates three cannabis dispensaries. It also provides lab-testing services. In addition to the company's dispensary locations, the company provides a direct-to-consumer delivery service for flower, pre-rolls, concentrates, edibles, seeds and accessories. The company performs in-house testing of its products and operates its own cultivation facility.

Spectrum King

Canoga Park, California
www.spectrumkingled.com

Spectrum King is a producer of cannabis grow lights and accessories. The company offers a range of full-spectrum LED grow lights and grow tents. Its products are available through a network of international distributors.

Steep Hill Labs

Berkeley, California
www.steephill.com

Steep Hill Labs is a cannabis lab-testing company that tests cannabis and cannabis-based products for potency, pesticides and microbiology. The company has developed QuantaCann2™, an in-field cannabis-testing technology system; GenKit™, a male cannabis-plant identification system; and Strain Fingerprint™, a graphical depiction of a strain's most common cannabinoids. The company has locations or licensees nationwide.

StickyGuide

Los Angeles, California
www.stickyguide.com

StickyGuide is a digital media company that operates an online content and directory site focused on cannabis consumers. The company's website provides detailed cannabis-strain information as well as reviews. The company also provides a dispensary locator. The website maintains an active member base and an online user-generated content forum.

Strainz

Las Vegas, Nevada
www.strainz.com

Strainz is a cannabis-brand management company. The company partners with producers to create cannabis oil cartridges and tinctures. Its products are available in dispensaries located in Colorado, Nevada and Washington.

Teewinot Life Sciences

Tampa, Florida
www.tlscorp.com

Teewinot Life Sciences is a pharmaceutical company focused on the biosynthetic production of cannabinoids. The company has developed processes for cannabinoid formulations intended for cannabinoid-based human therapies.

Tikun Olam

Safed, Israel
www.tikun-olam.info

Tikun Olam produces and supplies cannabis in Israel. The company cultivates medical cannabis strains, conducts research and educates patients on the use of medical cannabis. It conducts business in Israel, Canada, Australia and the United States.

Treez

Fremont, California
www.treez.io

Treez is a software company that has developed an enterprise resource-management platform for cannabis dispensaries. The company provides software and services to support all aspects of operations in dispensaries located throughout a number of states.

Trellis

Oakland, California
www.trellisgrows.com

Trellis provides inventory-management software for the cannabis industry. The company provides software to aid cultivators, producers and dispensary operators in tracking their business from seed to sale. The software is designed to aid customers in compliance.

Trulieve

Quincy, Florida
www.trulieve.com

Trulieve is an operator of medical cannabis dispensaries in Florida, offering a selection of concentrates in the form of capsules, syringes, tinctures and vaporizers. The company also maintains its own cannabis cultivation facility.

Utopia Farms

Santa Cruz, California
www.utopiafarms.org

Utopia Farms is a producer of branded cannabis products. The company produces cannabis flower, concentrates and cannabis-infused macaroons that are available in dispensaries throughout California.

VapeWorld

Boca Raton, Florida
www.vapeworld.com

VapeWorld operates an online e-commerce website dedicated to cannabis accessories. Vaporizers from leading manufacturers, as well as parts and accessories, are available on its website. The company also provides consumers with online content about vaping.

Vapexhale

San Francisco, California
www.vapexhale.com

Vapexhale is a vaporizer technology company that designs and manufactures branded vaporizers that use conductive heating. The company develops tabletop and portable vaporizers that are designed for use with concentrates and flower.

VCC Brands

Los Angeles, California
www.vccbrands.com

VCC Brands is a manufacturer of branded cannabis-infused products. The company offers cannabis-infused beverages, cookies, chocolates, teas, honeys, cooking oils and tinctures. Its products are available in dispensaries located throughout California and Washington.

Vuber

Seattle, Washington
www.vubervaporizers.com

Vuber is a manufacturer of cannabis vaporizers. The company designs and markets cannabis vaporizers and vaporizer accessories that are available in retail stores and dispensaries in Washington and Oregon. The company's products are also available online.

Wana Brands

Boulder, Colorado
www.wanabrands.com

Wana Brands is a producer of cannabis-infused products, including cannabis-infused candies and capsules. Its products are available in dispensaries in Colorado, Oregon and Nevada.

Web Joint

Los Angeles, California
www.webjoint.com

Web Joint is an online technology software-as-a-service company. The company provides software for dispensaries to manage point-of-sale transactions, online ordering and delivery management. The software integrates with a dispensary's website for a white-labeled software solution.

Weedmaps

Orange County, California
www.weedmaps.com

Weedmaps is a digital media company that operates an online networking and content directory site. The company allows users to locate and view reviews of local cannabis dispensaries, as well as user-generated strain reviews.

Weedguide

San Diego, California
www.weedguide.com

Weedguide is a digital media company that operates a cannabis-centric search engine and an informational website about recreational and medical cannabis. The site offers a collection of articles, videos, products, dispensary locations, recipes and strain information.

Wellness Connection of Maine

Portland, Maine
www.mainewellness.org

Wellness Connection of Maine is an operator of medical cannabis dispensaries in Maine. The company offers a selection of cannabis flower, concentrates, edibles and recipes.

CHAPTER IX

Cannabis Industry Risk Factors

Companies in the cannabis industry are subject to many risks. The realization of one or more of these risks could have a material adverse effect on the business and results of operations of a company and on its lenders, investors and principals. The following discussion highlights some, but not all, of these risks.

Risks Related to U.S. Federal Law

- The manufacture, distribution, dispensing and possession of cannabis are strictly controlled under the Controlled Substances Act (CSA), irrespective of whether such activities comply with applicable state law. Financial transactions in connection with cannabis-related violations of the CSA may violate other federal laws. Individuals and businesses—including the principals, employees, directors, agents, lenders and investors of such businesses—that violate the CSA or such other laws are subject to fines, asset seizure and imprisonment under federal law.
- Federal statutes and policies that currently restrict or deprioritize enforcement of certain CSA violations related to cannabis are subject to expiration, rescission and other changes. There can be no assurance that in the future the federal government will not strictly and aggressively enforce cannabis-related CSA provisions.
- If CSA controls applicable to cannabis are relaxed or repealed in the future, other federal laws and regulations governing the production, distribution and marketing of products for human consumption, such as the Federal Food, Drug, and Cosmetic Act, may be more strictly enforced by the federal government in relation to the cannabis industry.
- CSA controls and federal enforcement priorities applicable to cannabis both preclude interstate commerce in cannabis and cannabis products. As a result, it can be costly or impractical for companies in the cannabis industry to operate in multiple states and to gain economies of scale through centralized operations.

- Federal income tax law precludes a business that "consists of trafficking in" cannabis or cannabis products from deducting certain operating expenses in determining its federal income tax. As a result, businesses in the cannabis industry may have effective tax rates significantly higher than other businesses subject to federal income tax, may owe tax on taxable income that is not actual economic income generated by the business and may have tax liabilities in amounts that exceed cash reserves.
- Because of CSA controls on cannabis and federal laws applicable to banks and other financial institutions, companies in the cannabis industry may not be able to open or maintain bank accounts or access products and services of traditional financial institutions, such as credit facilities, payment processing and insurance coverage. A lack of access to banking and other traditional financial products and services increases the time, effort and expense related to ongoing operations and increases risks associated with cash transactions and the use of alternative products and services.
- Trademarks used by companies to identify, distinguish or indicate the source of cannabis or related products or services that are illegal under federal law are not eligible for registration under federal trademark law, which is generally recognized as the most comprehensive trademark protection available in the United States. Alternative means of protecting such trademarks may not be available or may provide protections inferior to the protection provided by federal registration.
- Protections afforded under federal bankruptcy law generally are not available to companies whose assets consist of federally illegal cannabis products or proceeds therefrom or to the creditors of such companies.
- The federal government may pursue legal action against a state related to the state's cannabis laws, which may result in significant changes to the state's legal landscape as it relates to cannabis and may materially and adversely affect cannabis businesses in the state.
- Cannabis companies outside the United States whose business plans anticipate eventual access to U.S. markets face uncertainty as to the timing or nature of changes in federal law that would allow importation of cannabis products into the country.

Risks Related to U.S. State and Local Laws

- State laws and regulations that legalize or decriminalize cannabis and related activities are relatively new and may change significantly or be reversed. The extent and nature of any such changes are not foreseeable and may force cannabis companies to materially alter their business models, suffer material losses or cease operations entirely.
- State and local laws may limit the number of cannabis businesses in the state or in a particular locality, restrict the nature of such businesses (for example, by prohibiting for-profit cannabis businesses) or place restrictions on the persons permitted to own or operate such businesses.
- Many state and local jurisdictions support legalizing or decriminalizing cannabis activities primarily for the potential to generate tax revenue, and there is significant public pressure to impose a heavy tax burden on those participating in the cannabis industry. State and local governments may impose significant taxes on commercial cannabis activity and may do so unpredictably.

- There is currently a lack of broad interstate reciprocity with respect to cannabis laws.
- Even in states where cannabis is legal under state law, local jurisdictions may impose bans or restrictions that materially interfere with or effectively prevent the operation of cannabis businesses within their boundaries.

Risks Related to the Manufacture and Sale of Cannabis Products

- Cannabis companies are exposed to various product liability claims associated with human consumption of cannabis products, including claims that products cause injury, illness, possible side effects or interactions with other substances, or that products include inadequate instructions for use or warnings concerning health risks.
- Cannabis companies may be subject to product recalls for a variety of reasons, including product defects, such as contamination. Such recalls may result in financial burdens and reputational harm and may subject cannabis companies to increased regulatory scrutiny.
- Consumer perception of cannabis products can be significantly influenced by scientific research or findings, regulatory investigations, litigation, media attention and other publicity regarding the consumption of cannabis. Any unfavorable developments in these areas could have a material adverse effect on the demand for cannabis products in general or on the products or prospects of a particular company.

Risks Related to Early-Stage Cannabis Companies

- Most cannabis companies are in early stages of development and have limited operational history, so it is difficult to accurately predict and forecast their business operations. Many cannabis companies will fail.
- The success of many early-stage cannabis companies is premised on receiving and maintaining the licenses, permits and regulatory approvals required for their proposed cannabis activities. Many of such companies will not receive or maintain such licenses, permits and approvals or may be able to do so only at significant expense.
- Cannabis companies' access to the capital required to grow and to finance ongoing operations involves challenges particular to the industry's uncertain and rapidly evolving legal landscape. Many early-stage companies in the cannabis industry will not be able to obtain the requisite capital or will run out of capital prior to reaching profitability.
- Early-stage cannabis companies may experience unexpected problems in the areas of product development and quality, manufacturing, marketing and general management, which, in some cases, cannot be adequately solved. Companies may also be subject to product pricing and cost pressures and to claims of intellectual property infringement.

Other Risks to Companies in the Cannabis Industry

- The cannabis industry is extremely competitive in most segments, with certain companies having unique competitive advantages such as greater capital resources, first-mover advantage, more scalable business models and greater brand recognition.
- To date, the research conducted on cannabinoid-derived pharmaceuticals and other cannabis-based therapies is limited. There is no assurance that cannabinoid-derived pharmaceuticals or other medical products will prove effective in treating medical conditions or achieve broad market acceptance.
- Given the emerging nature of the cannabis industry, there is a scarcity of qualified personnel with deep industry experience and significant competition for such qualified personnel. Many cannabis companies may not be successful in attracting, training, integrating, motivating or retaining qualified management teams and other personnel.
- Cannabis is an agricultural product. The occurrence of diseases, insects, pests, mold and other infestations and severe adverse environmental conditions, such as fire, drought, hail, flood or frost, is unpredictable, may have a potentially devastating impact on agricultural production of cannabis and may otherwise adversely affect the supply of cannabis.
- The cannabis industry is particularly vulnerable to rapidly changing technology, government regulation and relatively high risks of obsolescence caused by scientific and technological advances. The success of cannabis companies will depend in part on their ability to anticipate market, legal, technological and other trends in the industry. Many cannabis companies will fail to accurately identify or predict industry trends.
- Cannabis laws and regulations in jurisdictions outside the United States vary widely and, in some cases, are as complex, contradictory and rapidly changing as those within the United States. Cannabis companies operating outside the country's borders are subject to risks related to the unsettled legal environment applicable to cannabis.
- Due to federal controls on cannabis within the United States and similar restrictions in many jurisdictions outside the country, there is a significant black market for cannabis products. Government-regulated cannabis businesses face competition from black market participants and are subject to different market forces than those of the black market.

CHAPTER X

Glossary of Terms

Ackrell Capital, LLC a leading independent investment bank focused on the cannabis industry

ACMPR Canada's Access to Cannabis for Medical Purposes Regulations

Aeroponics a method of growing plants whereby the roots hang suspended in a nutritional aerosol solution

Bankruptcy Code Bankruptcy Reform Act of 1978

BHO Butane hash oil. *See* Hash oil

Bong a device used to smoke cannabis flower via a water chamber through which the smoke passes prior to inhalation; commonly made of glass or plastic

BSA Bank Secrecy Act

Bud a slang term for cannabis flower

Cannabichromene (CBC) a nonpsychoactive cannabinoid believed to have several medicinal benefits, including analgesic, antibacterial, anticancer, antidepressant, antifungal, anti-inflammatory and anti-insomnia

Cannabidiol (CBD) a nonpsychoactive cannabinoid believed to have wide-ranging medicinal benefits and therapeutic applications; the second most abundant cannabinoid in cannabis

Cannabidiolic acid (CBDA) a nonpsychoactive cannabinoid believed to have several medicinal benefits, including anticancer, antiemetic and anti-inflammatory; the precursor to cannabidiol (CBD)

Cannabigerol (CBG) a nonpsychoactive cannabinoid believed to have several medicinal benefits and therapeutic applications; may partially counteract the psychoactive effect of THC and decrease anxiety and muscle tension

Cannabigerolic acid (CBGA) a nonpsychoactive cannabinoid that is a precursor to all other cannabinoids, including THC, CBD, CBC and CBG

Cannabinoid a class of chemical compounds present in cannabis that act on cannabinoid receptors in cells in the human nervous and immune systems

Cannabinol (CBN) a cannabinoid derived from THC degradation; shown to produce some psychoactive effects and believed to have several medicinal benefits, including analgesic, antibacterial, anticonvulsive, anti-inflammatory and anti-insomnia

Cannabis a genus of flowering plant consumed for therapeutic, medicinal, social or spiritual purposes and used to produce goods such as rope, paper, clothing and soap; includes three principal cannabis species: *Cannabis sativa, Cannabis indica* and *Cannabis ruderalis*

CBC *See* Cannabichromene

CBD *See* Cannabidiol

CBDA *See* Cannabidiolic acid

CBG *See* Cannabigerol

CBGA *See* Cannabigerolic acid

CBN See Cannabinol

CDSA Canada's Controlled Drugs and Substances Act

Chemovar a plant variety characterized by its chemical content

Clone an asexually reproduced cannabis plant genetically identical to the plant from which it was produced

CND Commission on Narcotic Drugs, a subsidiary body of the United Nation's ECOSOC that assists the ECOSOC in supervising the application of international drug control treaties

Cole Memo a memorandum published by the DOJ that provides guidance to DOJ attorneys and federal law enforcement about prosecuting cannabis-related federal offenses

Concentrates a category of consumer cannabis products; any number of concentrated forms of the active compounds in cannabis; typically an oil or waxlike substance

Conventions three international treaties adopted through the United Nations between 1961 and 1988 that address international regulation of cannabis, cannabis derivatives and many other narcotic, psychotropic and similar substances (The Single Convention on Narcotic Drugs of 1961; The Convention on Psychotropic Substances of 1971; and The United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988)

Crumble a form of wax concentrate

CSA Controlled Substances Act

CSE Canadian Securities Exchange

Curing a phase of the cannabis cultivation process during which dried cannabis flower undergoes controlled fermentation to develop the flower's aroma, taste and cannabinoid composition

Dab a potent concentrated form of the psychoactive cannabinoid THC

DEA U.S. Drug Enforcement Agency, an agency of the U.S. Department of Justice

Delta-9-Tetrahydrocannabinolic acid (THCA) a nonpsychoactive cannabinoid found abundantly in raw flower; precursor to THC; decarboxylates into THC through the application of intense heat

DHHS U.S. Department of Health and Human Services

DOJ U.S. Department of Justice

DOT U.S. Department of the Treasury

Dronabinol a form of chemically synthesized THC included in certain FDA-approved pharmaceuticals; a Schedule II or Schedule III controlled substance under the CSA, depending on its preparation

Drying a part of the harvesting phase of cannabis cultivation during which plants are dried; typically occurs at room temperature in a dark space

ECDD Expert Committee on Drug Dependence; a committee of the World Health Organization (WHO) tasked with making drug control recommendations to the CND on behalf of the WHO

ECOSOC Economic and Social Council, one of the six main organs of the United Nations established under the United Nations charter in 1945

Edible a food- or drink-based infused product intended for oral consumption; commonly baked goods, flavored drinks or candies

Endocannabinoid cannabinoids created naturally by the human body

Exchange Act Securities Exchange Act of 1934

Extraction a process for extracting active compounds from the cannabis plant; extraction techniques fall into two general categories, solvent-based extraction and solvent-free extraction

Farm Bill Agricultural Act of 2014

FDA U.S. Food and Drug Administration, an agency of the DHHS

FD&C Act Federal Food, Drug, and Cosmetic Act

FinCEN Financial Crimes Enforcement Network, a bureau of the DOT

FinCEN Memo a memorandum published by FinCEN outlining how banks and other financial institutions can, consistent with their BSA obligations, provide services to marijuana-related businesses

Flower the flower of the cannabis plant, also known as "bud"; the highest concentration of active compounds present in cannabis are found in the flowers of unpollinated female cannabis plants; smoking flower is the most popular method of cannabis consumption

Ganja a popular name for cannabis

Germination the process by which a dormant seed begins to sprout and grow into a seedling

Hash oil a concentrate prepared through extraction using a butane solvent; also known as hashish oil, butane hash or honey oil (BHO), cannabis oil or liquid cannabis

Hashish (hash) a concentrate made up of compressed or purified trichomes

Hemp the fiber produced from the stalks of the cannabis plant, which can be used to produce goods such as rope, paper and clothing; also refers to varieties of cannabis cultivated to produce industrial hemp products

HID lamp a high-intensity discharge lamp; a category of lamp used for indoor cannabis cultivation

Hit a slang term for one inhalation from a cannabis smoking device or vaporizer

Homeostasis a process by which biological systems tend to maintain internal stability, or balance

Human endocannabinoid system a system of nervous and immune system receptors involved in regulating health and physiological functions within the human body

Hybrid a cannabis variety that is a genetic cross of two or more different cannabis species or varieties produced through sexual reproduction

Hydroponics a method of growing plants whereby the roots grow in a nutrient-rich sand, gravel or liquid growth medium

Indica one of three principal cannabis species; indica plants tend to be short and bushy

Infused products a category of consumer cannabis products; ingestible products that have been infused with cannabinoids and other active compounds from the cannabis plant

IRC Internal Revenue Code

IRS Internal Revenue Service

Joint a hand-rolled cannabis cigarette

Kief a concentrate composed of trichomes that are separated from the cannabis flower by sifting the flower with specialized filtering screens

LED a light-emitting diode; a category of lamp used for indoor cannabis cultivation

Marijuana a slang term for dried cannabis flower; a legal term for certain parts and derivatives of the cannabis plant defined in the CSA

MAUCRSA California's Medicinal and Adult Use Cannabis Regulation and Safety Act

Nabilone a form of chemically synthesized cannabinoid similar to THC included in an FDA-approved pharmaceutical; a Schedule II controlled substance under the CSA

Nasdaq Nasdaq Stock Market

NDA New Drug Application; an application submitted by a drug manufacturer to the FDA for approval of a drug

NYSE New York Stock Exchange

Oil a category of viscous cannabis concentrates

OTC over-the-counter stock market

Pipe a device used to smoke cannabis flower; commonly made of glass, wood or metal

PPM a private placement memorandum; used by issuers of securities in private offerings to market securities

PVPA Plant Variety Protection Act

Ruderalis one of three principal cannabis species; ruderalis plants are shaggy and the shortest of the three species

SAR Suspicious Activity Report; required to be filed by financial institutions with FinCEN regarding customers engaged in marijuana-related businesses

Sativa one of three principal cannabis species; sativa plants are generally tall, thin and wispy

SEC U.S. Securities and Exchange Commission

Section 280E Internal Revenue Code section 280E

Securities Act Securities Act of 1933

Shatter a concentrate prepared through solvent-based extraction; typically has an amber-glass transparency

Strain another term for a cannabis plant variety

Terpene a class of organic compounds present in cannabis and many other plants; responsible for a plant's aroma and flavor; believed to have wide-ranging therapeutic applications

Tetrahydrocannabinol (THC) delta-9-tetrahydrocannabinol and certain chemical variants, including delta-8-tetrahydrocannabinol; the psychoactive compound in cannabis primarily responsible for the euphoric feeling of being "high"; the most abundant cannabinoid in cannabis; believed to have wide-ranging medicinal benefits and therapeutic applications

THC *See* Tetrahydrocannabinol

THCA *See* Delta-9-Tetrahydrocannabinolic acid

Tincture a concentrate suspended in an alcohol solution; usually placed under the tongue using a dropper (sublingual application)

Topical an infused product intended for topical application; typically a lotion, balm, cream, lubricant or transdermal patch

Trichome a crystalline or hairlike component that secretes cannabinoids, terpenes and other compounds; generally occur all over the cannabis plant, but found in highest concentration on the flower

TSX Toronto Stock Exchange

TSXV TSX Venture Exchange

UN United Nations

UNGASS United Nations General Assembly Special Session

UNODC United Nations Office on Drugs and Crime

USDA U.S. Department of Agriculture

USPTO U.S. Patent and Trademark Office

Vaporizer a device that heats cannabis flower or concentrate to a temperature at which its active compounds boil and can be inhaled as vapor

Variety a plant grouping within a single botanical taxon of the lowest known rank (species) with defining characteristics that distinguish it from any other plant grouping within such rank

Wax a category of cannabis concentrates; refers to the softer, opaque oils that have lost their transparency after extraction

Weed a slang term for dried cannabis flower

WHO World Health Organization, an autonomous intergovernmental organization that collaborates with the United Nations and other organizations on global health matters

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Ackrell Capital Cannabis Team

Mike Ackrell
Founder
mackrell@ackrell.com

Mike Ackrell founded Ackrell Capital in 2003. Previously, Mr. Ackrell was the Head of ABN AMRO's U.S. Technology Investment Banking Group and the Head of Investment Banking at WR Hambrecht+Co. He also was a Senior Vice President in the Technology Investment Banking Group of Donaldson, Lufkin & Jenrette, where he began his investment banking career in 1988. Mr. Ackrell has completed more than 150 financing transactions, including more than 50 initial public offerings, and more than 100 M&A transactions, totaling more than $15 billion in value. He serves on the Board of Directors of a number of companies, including American Giant, Scrubbed and Vator.tv. Mr. Ackrell holds a B.S. in Economics, summa cum laude, with majors in Finance and Accounting, from the Wharton School of the University of Pennsylvania.

Tim Coxon
General Counsel
tcoxon@ackrell.com

Tim Coxon joined Ackrell Capital in 2017 after serving as the firm's legal counsel for more than five years. Previously, Mr. Coxon was a corporate finance attorney in Silicon Valley focused on venture capital fund formation, early stage company financings, mergers and acquisitions and related areas of tax and securities law. He has advised dozens of VC firms on fund and management-level structuring and portfolio company investment transactions, and has advised private companies in M&A transactions valued at more than $1.5 billion. Mr. Coxon also has worked as a consultant performing financial and economic analysis for use in corporate litigation and regulatory matters, and taught college level mathematics for more than 13 years, including 7 years as an adjunct statistics professor for the M.B.A. program at Santa Clara University. Mr. Coxon holds a J.D. from the Santa Clara University School of Law, an M.A. in Mathematics from San Francisco State University, and a B.A. in Mathematics from the University of Texas at Austin.

Bryan Castillo
Partner
bcastillo@ackrell.com

Bryan Castillo joined Ackrell Capital in 2015. Previously, Mr. Castillo served as an adviser to governments on economic and foreign policy. He has more than 10 years of investment banking experience focused primarily on cross-border transactions spanning Asia, Europe and the Middle East. Mr. Castillo has experience in a number of industries, including agriculture, cleantech, consumer, energy, media, real estate and technology. He has advised on more than 50 financing transactions, primarily with state-owned enterprises and private companies. Mr. Castillo works closely with several family offices on private equity and venture capital investments. Mr. Castillo holds a B.S. in Economics from the Pennsylvania State University.

Jeff Mathews
Partner
jmathews@ackrell.com

Jeff Mathews joined Ackrell Capital in 2015. Previously, Mr. Mathews was a Director with Seven Hills Group, a boutique investment bank focused on middle-market technology companies. He has more than 15 years of investment banking experience and was also an Associate in the Technology Investment Banking Groups at Deutsche Bank and Lehman Brothers. He has advised on a broad range of financings and M&A transactions across a variety of technology industries totaling more than $10 billion in value. Mr. Mathews holds a B.A. in Economics from the University of Chicago.

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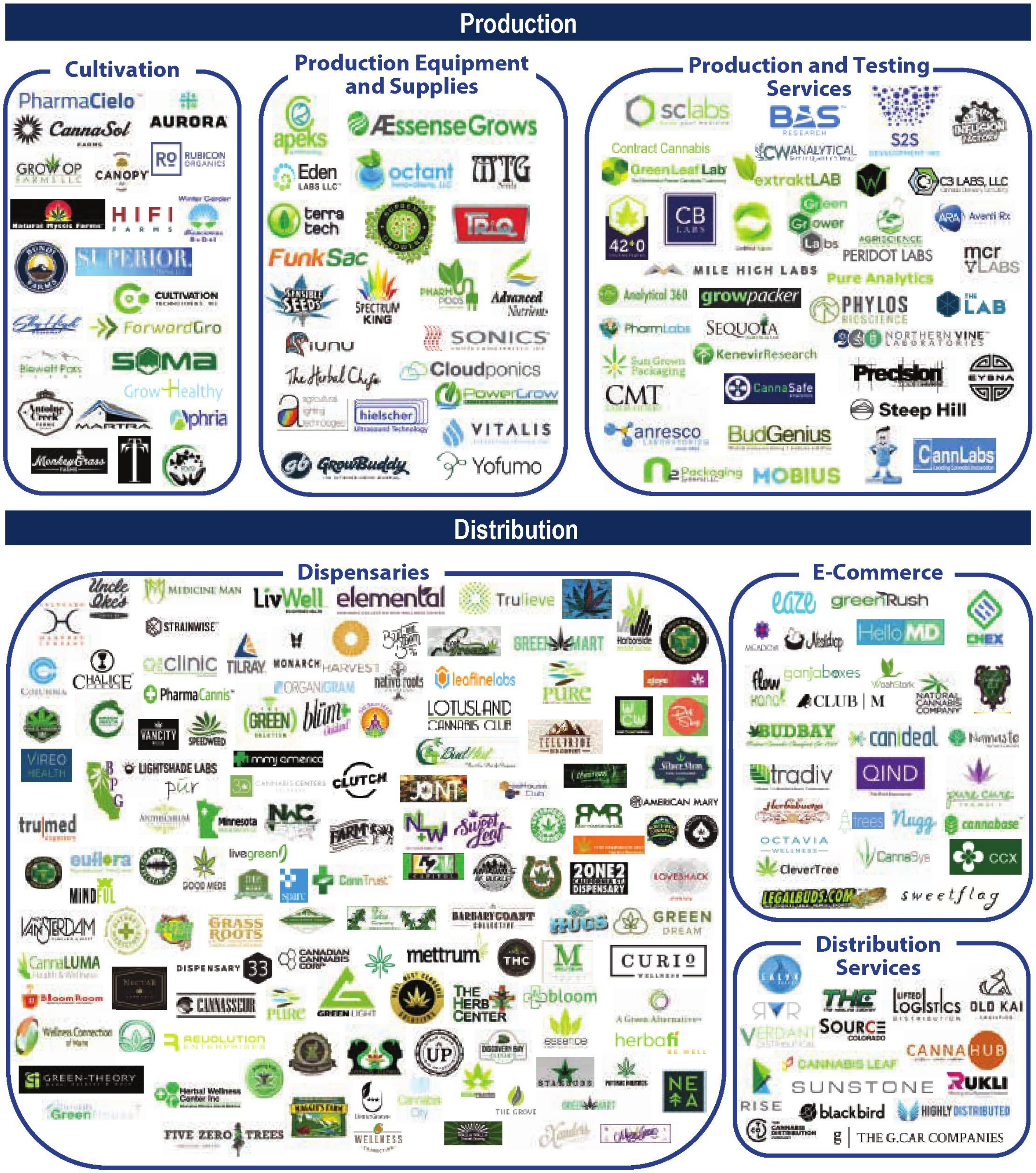
THE GREEN FIELD 2018


Production
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CannaSol
AURORA
GROW OP FARMS LLC
CANOPY
RUBICON ORGANICS
Natural Mystic Farms
HIFI FARMS
Winter Garden
BUNDI FARMS
SUPERIOR
CULTIVATION TECHNOLOGIES, INC
ForwardGro
Blewett Pass
SOMA
GrowHealthy
Antoine Creek Farms
MARTRA
Aphria
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ÆssenseGrows
Eden LABS LLC
octant
ATG
terra tech
SUPREME GROWERS
TRiQ
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SENSIBLE SEEDS
SPECTRUM KING
PHARM PODS
Advanced Nutrients
iUNU
SONICS
The Herbal Chef
Cloudponics
agricultural lighting technologies
hielscher
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S2S
INFUSION FACTORY
Contract Cannabis
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GreenLeaf Lab
extraktLAB
C3 LABS, LLC
42°0
CB LABS
Green Grower Labs
AGRISCIENCE
ARA
Aventi Rx
MILE HIGH LABS
PERIDOT LABS
mcr LABS
Pure Analytics
Analytical 360
growpacker
PHYLOS BIOSCIENCE
THE LAB
PharmLabs
SEQUOIA
360
NORTHERN VINE LABORATORIES
Sun Grown Packaging
KenevirResearch
Precision
EYDNA
CMT
CannaSafe
Steep Hill
anresco
BudGenius
CannLabs
N2 Packaging
MOBIUS
Distribution
Dispensaries
Uncle Ike's
MEDICINE MAN
LivWell
elemental
Trulieve
Harborside
STRAINWISE
TILRAY
MONARCH
HARVEST
Bud and Mary's
GREEN MART
COLUMBIA
CHALICE
clinic
ORGANIGRAM
native roots
leaflinelabs
PURE
PharmaCannis
GREEN
blüm
LOTUSLAND CANNABIS CLUB
VANCITY
SPEEDWEED
TELLURIDE
VIREO HEALTH
mmj america
LIGHTSHADE LABS
pür
CANNABIS CENTERS
CLUTCH
JOINT
Silver Stem
AMERICAN MARY
tru|med
Minnesota
NWC
FARMACY
NW
Sweet Leaf
euflora
livegreen
GOOD MEDS
spark
CannTrust
420
20NE2
LOVESHACK
MINDFUL
VANSTERDAM
GRASS ROOTS
BARBARY COAST
HUGS
GREEN DREAM
CannaLUMA
NECTAR
DISPENSARY 33
CANADIAN CANNABIS CORP
mettrum
THC
M
CURIO WELLNESS
BloomRoom
CANNASSEUR
PURE
GREEN LIGHT
THE HERB CENTER
bloom
A Green Alternative
Wellness Connection of Maine
REVOLUTION ENTERPRISES
herbafi
UP
DISCOVERY BAY
essence
GREEN-THEORY
Herbal Wellness Center Inc
STARBUDS
NEA
GreenHouse
FIVE ZERO TREES
WELLNESS
THE GROVE
GREEN MART
E-Commerce
eaze
greenRush
Hello MD
CHEX
MEADOW
Nestdrop
flow
ganjaboxes
WeedStork
NATURAL CANNABIS COMPANY
Kona
CLUB | M
BUDBAY
canideal
Namaste
tradiv
QIND
pure cure
Herbabuena
trees
Nugg
cannabase
OCTAVIA WELLNESS
CannaSys
CCX
CleverTree
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sweetflag
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RVR
THE
LIFTED LOGISTICS DISTRIBUTION
OLD KAI
VERDANT DISTRIBUTION
SOURCE COLORADO
CANNAHUB
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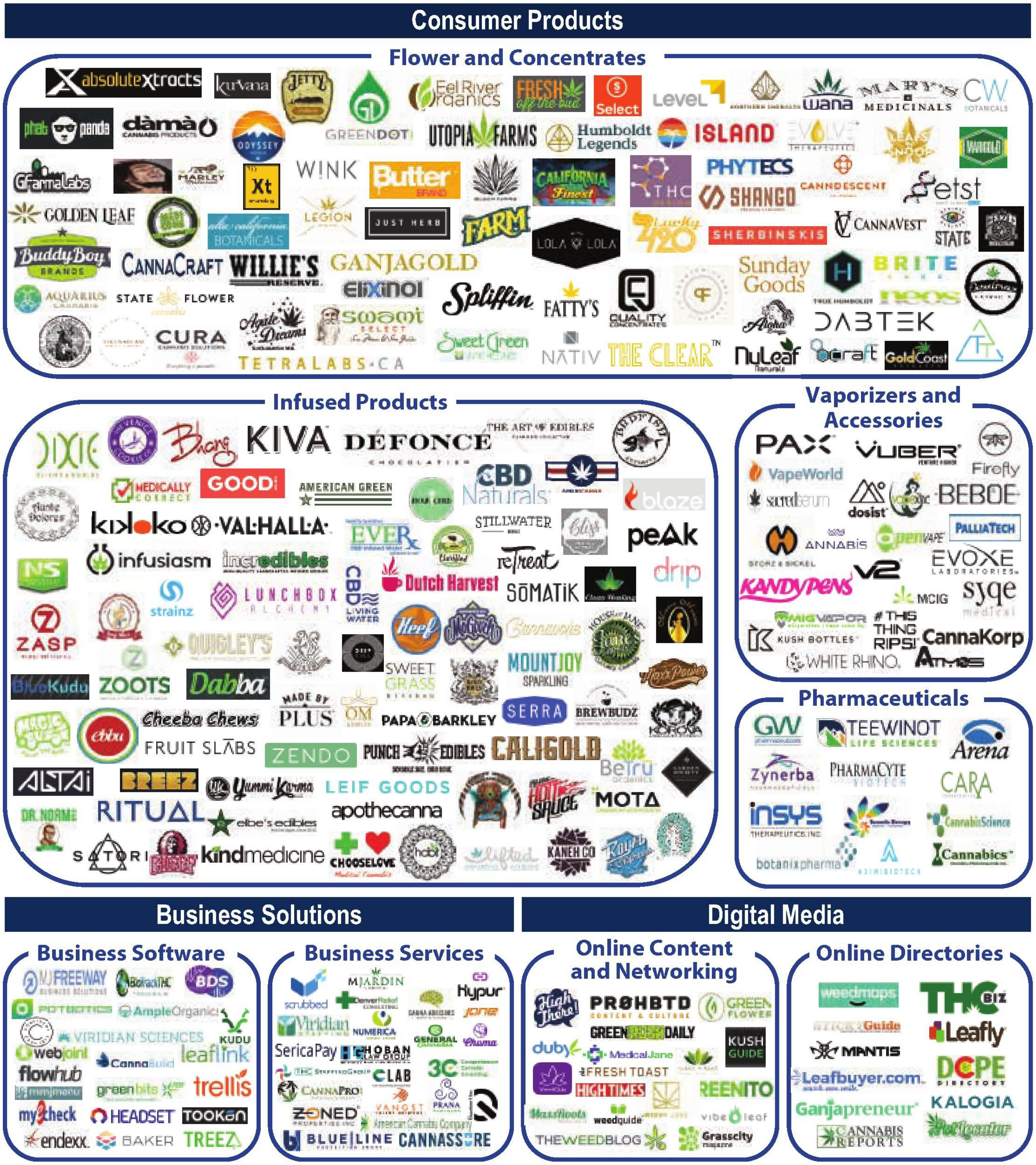
SUNSTONE
RUKLI
RISE
blackbird
HIGHLY DISTRIBUTED
THE CANNABIS DISTRIBUTION COMPANY
THE G.CAR COMPANIES

THE GREEN FIELD 2018


Consumer Products
Flower and Concentrates
absolutextracts
kurvana
Jetty
Green Dot
Eel River Organics
Fresh off the bud
Select
Level
Northern Emeralds
Wana
Mary's Medicinals
CW Botanicals
phat panda
dàmà Cannabis Products
Odyssey
Utopia Farms
Humboldt Legends
Island
Evolve
Leafs by Snoop
Vapen
G FarmaLabs
Marley
Xt
Wink
Butter
Black Farms
California Finest
THC
Phytecs
Cannadescent
Shango
Etst
Golden Leaf
Alta California Botanicals
Legion
Just Herb
Farm
Lola Lola
Lucky 420
Sherbinskis
Cannavest
State
Buddy Boy Brands
CannaCraft
Willie's Reserve
Ganjagold
Elixinol
Spliffin
Fatty's
Quality Concentrates
Sunday Goods
True Humboldt
Brite
Neos
Aquarius Cannabis
State Flower
Cura
Apple Dreams
Swami Select
Sweet Green
Nativ
The Clear
NuLeaf Naturals
Dabtek
Ooraft
Gold Coast
Tetralabs.ca
Infused Products
Dixie
Bhang
Kiva
Défonce Chocolatier
The Art of Edibles
CBD Naturals
American Green
Medically Correct
Good
Auntie Dolores
Blaze
kikoko
Valhalla
Ever
Stillwater
Bliss
peak
infusiasm
incredibles
reTreat
drip
NS
Dutch Harvest
Somatik
strainz
Lunchbox Alchemy
CBD Living Water
Zasp
Quigley's
Keef
Sweet Grass
Mountjoy Sparkling
Blue Kudu
Zoots
Dabba
Made by Plus
OM
Papa & Barkley
Serra
Brewbudz
Korova
Cheeba Chews
ebbu
Fruit Slabs
Zendo
Punch Edibles
Caligold
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Altai
Breez
Yummi Karma
Leif Goods
apothecanna
Mota
Dr. Norm's
Ritual
elbe's edibles
Satori
kindmedicine
Choose Love
Kaneh Co
Lifted
Vaporizers and Accessories
PAX
Vuber
Firefly
VapeWorld
sacredsun
dosist
Beboe
Annabis
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Openvape
PalliaTech
Kandypens
V2
MCIG
Evoxe Laboratories
syqe medical
MigVapor
Kush Bottles
#This Thing Rips!
CannaKorp
White Rhino
Atmos
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Arena
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PharmaCyte Biotech
CARA
Insys Therapeutics Inc
CannabiScience
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Business Solutions
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Potbotics
AmpleOrganics
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CannaBuild
leaflink
flowhub
mjmenu
greenbits
trellis
my2check
Headset
Tookan
endexx
Baker
Treez
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scrubbed
MJardin
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Numerica
General Cannabis
SericaPay
Hoban Law Group
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Cannasure
Digital Media
Online Content and Networking
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Prohbtd
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Green Rush Daily
duby
Medical Jane
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TOP 100 PRIVATE CANNABIS COMPANIES 2018

AEssenseGrows
Ample Organics
Apeks Supercritical
The Apothecarium
Auntie Dolores
Baker Technologies
BAS Research
BDS Analytics
Beboe
Berkeley Patients Group
BioTrackTHC
Bloom Farms
Brewbudz
Bud and Bloom
Calyx Brands
Cannabis Reports
CannaCraft
CannaKorp
Colorado Harvest Company
Columbia Care
Confident Cannabis
Cultivation Technologies
Cura Cannabis Solutions
CW Analytical
Deep Cell
Défoncé
Dixie Elixirs
Dosist
Eaze Solutions
Eel River Organics
Elemental Wellness
Euflora
Evolve Therapeutics
Evoxe Laboratories
Flow Kana
Flowhub
FunkSac
Garden State Dispensary
GFarmaLabs
Gold Coast Extracts
Green Dot Labs
Green Flower Media
Green Rush
The Green Solution
Harborside Health Center
Harvest
Headset
HelloMD
Humboldt Legends
Incense Specialties
Jetty Extracts
Kikoko
KIVA Confections
Korova
LeafLink
Leafly
Level Blends
LivWell Enlightened Health
Lunchbox Alchemy
Mary's Medicinals
Meadow
Merry Jane
MiNDFUL
MJ Freeway
MJardin
MM Acquisition Co.
Native Roots
New Vansterdam
Northwest Cannabis Solutions
NWT Holdings (Firefly)
Organa Brands
PAX Labs
PharmaCielo
PRØHBTD Media
Qind
River Collective
Rubicon Organics
S2S Development
SC Laboratories
Scrubbed
SPARC
Spectrum King
Steep Hill Labs
StickyGuide
Strainz
Teewinot Life Sciences
Tikun Olam
Treez
Trellis
Trulieve
Utopia Farms
VapeWorld
Vapexhale
VCC Brands
Vuber
Wana Brands
Web Joint
Weedguide
Weedmaps
Wellness Connection of Maine

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CAPITAL

Ackrell Capital, LLC
38 Keyes Avenue, Suite 200
San Francisco, CA 94129

www.ackrell.com | info@ackrell.com | 415.995.2000

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Equity Research
Cannabis

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AHEAD OF THE CURVE® SERIES

COWEN'S COLLECTIVE VIEW OF CBD

FEBRUARY 25, 2019

11 Cowen analysts across consumer, health care, industrials, and regulatory offer a comprehensive view of the global CBD opportunity.

Nearly 7% of adults in our proprietary U.S. survey (n = ~2,500) reported using CBD as a supplement, far higher than we expected.

We believe U.S. CBD can conservatively generate sales of $16 bn by 2025. We offer detailed analysis at the sub-category level, as well as company-specific discussions, including Outperform rated WEED, TLRY, and TPB.

Cowen Research
646 562 1330
cowen.research@cowen.com

Vivien Azer
646 562 1351
vivien.azer@cowen.com

CANNABIS

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COLLABORATIVE INSIGHTS

February 25, 2019

- Cannabis

COWEN RESEARCH
EQUITY RESEARCH

Cowen Research
646 562 1330
cowen.research@cowen.com

Vivien Azer
646 562 1351
vivien.azer@cowen.com

John Blackledge
646 562 1359
john.blackledge@cowen.com

Andrew M. Charles, CFA
646 562 1332
andrew.charles@cowen.com

Oliver Chen, CFA
646 562 1424
oliver.chen@cowen.com

John Kernan, CFA
646 562 1324
john.kernan@cowen.com

Phil Nadeau, Ph.D.
646 562 1336
phil.nadeau@cowen.com

Charles Neivert
646 562 1370
charles.neivert@cowen.com

Jeffrey Osborne
646 562 1391
jeffrey.osborne@cowen.com

Charles Rhyee
646 562 1376
charles.rhyee@cowen.com

Doug Schenkel
617 946 3918
doug.schenkel@cowen.com

COWEN WASHINGTON RESEARCH GROUP
MACRO POLICY

Eric Assaraf
202 868 5304
eric.assaraf@cowen.com

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COLLABORATIVE INSIGHTS

COWEN'S COLLECTIVE VIEW OF CBD - AHEAD OF THE CURVE SERIES

THE COWEN INSIGHT

In a collaboration featuring 11 analysts spanning Cowen's consumer, health care, industrials and regulatory teams, we offer a deep dive on the global cannabis market, with a particular emphasis on the U.S. For consumer goods, we believe the U.S. CBD market could represent a $16 bn opportunity by 2025.

$16 bn Consumer Opportunity (Azer, Blackledge, Charles, Chen & Kernan)

In our monthly proprietary consumer survey (n = ~2,500) we were surprised to see that nearly 7% of respondents in January 2019 reported using CBD as a supplement. This strong consumer interest is validated by the growing number of brands and form factors that are now available through increasingly diverse retail channels, including Amazon, Sephora and Neiman Marcus. That said, consumption of CBD on-premise will likely take longer, given regulatory uncertainty. And, while our analysis primarily focuses on consumer staples applications for CBD, it is interesting to see a growing number of specialty apparel brands embrace hemp as a sustainable textile.

Retail sales of CBD consumer products in 2018 have been estimated between ~$600 mm and $2 bn. By 2025, we believe CBD offerings could conservatively generate $16 bn in retail sales (assuming a ~40% increase in consumer incidence, to 10%, and spend of less than $2 / day). Our bottom-up analysis anticipates a diverse category, that is still led by traditional health & wellness form factors (e.g., $6.4 bn in nutraceuticals, and $4 bn in topicals). And, while likely smaller, we also expect categories like food, beverages, beauty and vapor to all generate sales between ~$1-2.5 bn by 2025.

Herein, we offer a detailed look at category brand and pricing architecture in the U.S. CBD market today, as well as detailed discussions of 21 public and private operators that currently have exposure to the category, including Outperform rated Canopy Growth, Tilray and Turning Point Brands, which have all announced plans to enter the U.S. CBD market.

The Science of CBD (Nadeau)

Cannabis's therapeutic potential is attributable to the valuable overlap between phytocannabinoids (i.e. plant-derived cannabinoids) and the endogenous cannabinoid system in humans, termed a "therapeutic handshake." While THC's activity in the body is fairly well elucidated, CBD's pharmacokinetics are less well understood (no specific receptor for CBD has been identified). Clinical trial results to date demonstrate few adverse effects from oral CBD doses of up to 1500 mg/day or up to 30mg IV. The scientific understanding of CBD's clinical effects is based mostly on studies in specific indications, like epilepsy. GW Pharma's Epidiolex (highly potent, pure formulation of CBD) was approved by the FDA in 2018 for the treatment of seizures associated with Lennox-Gastaut syndrome and Dravet syndrome, and other companies (Tilray, MMJ Phytotech, Insys) have clinical trials underway in seizure disorders as well.

CBD Hemp Cultivation (Neivert)

According to the National Conference of State Legislatures, 41 states have set up cultivation and production programs to regulate the production of hemp. There is little research on CBD hemp cultivation methods as hemp cultivation research historically has focused on fiber and grain/seed. This lack of research, combined with a number of variables that affect hemp for CBD yield, makes hemp for CBD cultivation much more art than science at this point. That said, no other crop in the U.S. offers the type of return of the CBD Plasticulture Model, and we would thus expect the country's two largest crops, corn and soybeans, to lose some acreage to CBD hemp.

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Synthetic Biology Provides Alternative Cannabinoid Production Method; Life Science Tools Well Positioned To Benefit From QA/QC Testing Opportunity (Schenkel)

As an alternative to cultivation-based methods, cannabinoids can be produced using either chemical or synthetic biology approaches. Synthetic biology methods, which harness fermentation to produce cannabinoids, are particularly attractive considering they can potentially produce a variety of cannabinoids while being highly scalable, efficient, and environmentally friendly.

While QA/QC testing standards for CBD currently vary greatly by state (if any exist at all), we expect Life Science Tools companies to benefit from this nascent market opportunity as testing regulations are implemented and standardized. Similar to medical/recreational cannabis testing, instruments such as mass spectrometers and liquid/gas chromatographs are utilized to analyze CBD samples. Key vendors for mass spectrometry and chromatography instruments include Agilent, Danaher (SCIEX), PerkinElmer, Shimadzu, Thermo Fisher, and Waters Corporation.

CBD From a Retailer and Payor Perspective (Rhyee)

Healthcare: Drug Retailer Perspective: CBD products appear to be gaining traction with independent pharmacies, many of whom are already selling or planning to sell CBD oils. Independent pharmacies likely find the high-margin profile of CBD oils attractive, which we suspect is similar to those of more traditional over-the-counter drugs, as well as the differentiation it affords independents relative to larger chain pharmacies. For those selling CBD oils today, the focus is on quality, particularly as it relates to bioavailability. Large pharmacy chains, such as CVS and Walgreens, don't currently sell CBD oil, but WBA noted it is monitoring the CBD market.

Healthcare: Payor Perspective: Generally speaking, managed care does not cover OTC products, with the same being true for Medicare and Medicaid. Based on our conversations with a number of payors, whether CBD oils will be covered as a medical benefit by government sponsored health programs is determined by the Center for Medicare and Medicaid Services (CMS) and state governments. Currently, CBD products are not a covered benefit, or an extra benefit, that has been approved by CMS or states, and it isn't known at this time whether CMS or states governments are considering reimbursement for CBD products. Separately, Payors noted three factors complicating commercial coverage of CBD oils, including (1) legal issues, as CBD oils derived from THC (cannabis) isn't legal if it contains equal to or more than 0.3% THC; (2) lack of regulation by the FDA; and (3) its availability as an OTC medication.

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Global Landscape (Azer)

While the global regulatory landscape varies, the CBD category outside of the U.S. has been evolving rapidly, with more change likely to come with the WHO's current evaluation of CBD, as well as its recent addition to the EU's Novel Food Catalogue. In Europe, CBD products are now widely available in markets like the U.K., Italy and Switzerland, though regulations vary with Italy allowing for "cannabis light" products, with allowable THC of as much as 0.6%, while in Switzerland CBD products can have as much as 1% THC, and are classified as a tobacco substitute. In Latin America, hemp has been in production since the 1500s is also rapidly expanding their regulatory frameworks around marijuana and hemp. Canadian licensed producers have been actively entering the market in Latin America to capitalize on this evolving opportunity, including Canopy Growth, Tilray, Aurora and Cronos.

Regulatory Outlook (Eric Assaraf - Cowen Washington Research Group)

The 2018 Farm Bill declassifies industrial hemp as a Schedule I substance, shifts regulatory authority from the DEA to the Department of Agriculture, and provides autonomy for states to regulate the industry. However, the new law does not change the FDA's oversight authority over CBD products and FDA Commissioner Scott Gottlieb has made it clear that his agency will continue to step in when certain health claims are made. Additionally, FDA has stated that CBD cannot be added to food products sold across state lines or marketed as a dietary supplement, regardless of whether it is hemp-derived. The FDA will explore new pathways for CBD to be sold legally; however, it seems clear that there will be a period of regulatory uncertainty over CBD products at the state and federal level.

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COWEN'S COLLECTIVE VIEW OF CBD

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In a collaboration featuring 11 analysts across Cowen's consumer, health care, industrials and regulatory teams, herein we offer our outlook for the global CBD market, with a particular focus on the U.S. While little science exists supporting medical efficacy of CBD (with the exception of seizures, which GWPharma was able to prove with Epidiolex for Dravet syndrome and Lennox-Gastaut syndrome, as discussed in more detail herein), the popularity of CBD products seems to be growing exponentially in the U.S. Indeed, our consumer survey work suggest that close to 7% of adults in the U.S. already use CBD as a supplement.

With the category gaining increasing interest from consumers we have seen a swell in product innovation. And, the opportunity is increasingly drawing the attention of larger competitors (where for instance, WEED announced that they would consider spending as much as $500 mm in U.S. hemp / CBD). ***By 2025, we estimate that the U.S. CBD market could approach $16 bn (from $600 mm -$2 bn in 2018).***

Herein, we offer our views of:

1. Consumer Products Market Sizing (Azer)
2. The Science of CBD (Nadeau)
3. The Hemp / CBD Supply Chain: From Cultivation to Extraction (Neivert & Schenkel)
4. Consumer Products Opportunities (Azer)
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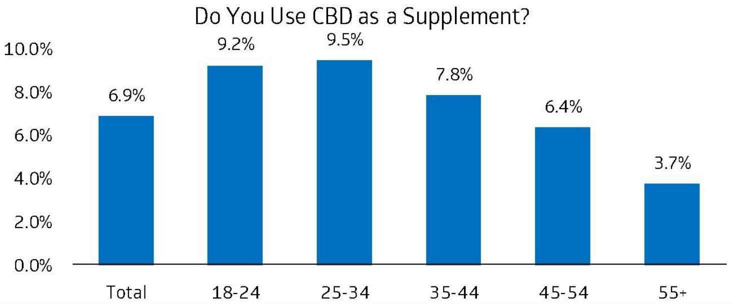
9. Global CBD Landscape (Azer)
10. Additional Potential Opportunities for Hemp / CBD, Including
    a. Pharmaceutical Applications (Nadeau)
    b. Industrial Applications (Osborne)

Consumer Products Market Sizing (Azer)

In our proprietary Cowen consumer survey (~2,500, 18+ respondents), we found that in January 2019 close to 7% of respondents indicated that they use CBD as a supplement. While this is only the first month's reading of the data (which can fluctuate from month to month), this initial response piqued our interest considerably, as it was much higher than we would have suspected. Indeed, to put the 6.9% incidence rate in context, that compares to JUUL use of 4.2%, and 19.6% of consumers that consider themselves a current tobacco user, per our survey.

From a user perspective, category engagement not surprisingly skews younger, with use among 18-24 and 25-34 year olds at over 9%, while it is below 4% for consumers 55+.

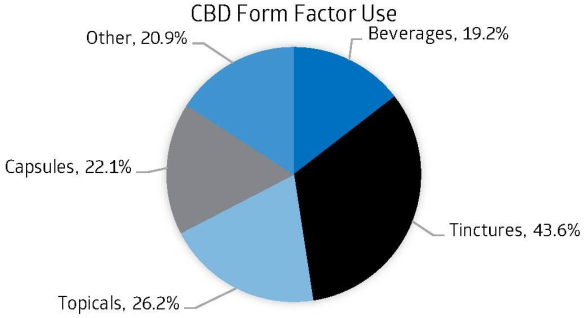
Figure 1 CBD Use Over-Indexes to Consumers Aged 18-34



Source: Cowen Survey, n=~2500, January 2019

While the category remains nascent (with revenue estimates ranging from $600 mm to $2 bn in 2018) it seems clear that the abundance of choice, which we discuss in more detail herein, has been a key driver of that consumer engagement. In particular, we were surprised to see that beverages already account for close to 20% of reported form factor use, given that this segment is among the newer offerings in the market place. Meanwhile, tinctures, which were arguably one of the original delivery systems, has a dominant 44% share.

Figure 2 Tinctures Are the Most Popular Delivery Mechanism



Source: Cowen Survey, n=~2500, January 2019

Note: Users had the option to choose multiple form factors

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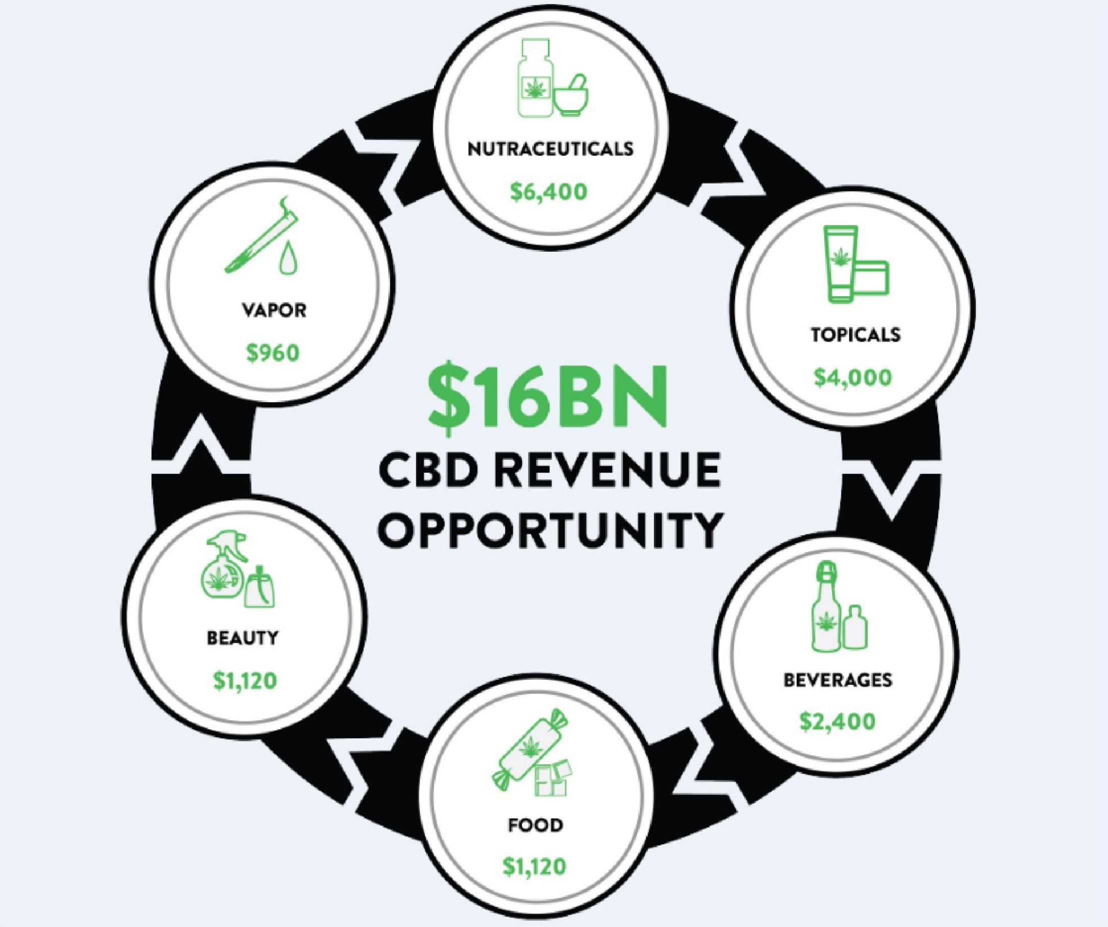
While we are keen to gain more insights into the evolving use of CBD in the coming months from our survey work, this initial snapshot offers a framework for sizing the ultimate CBD opportunity. With growing consumer awareness, we conservatively believe that CBD use can grow to 10% of adults in the U.S., or ~25 mm consumers (using current population) by 2025. If we assume that the average consumer ultimately spends $640 per year (or less than $2 / day), that would imply a $16 bn market opportunity for CBD. We would note that using the U.S. Census 18+ population projection in 2025, a 10% incidence rate would equate to just over $590 in annual spend to achieve $16 bn. Conversely, holding the $640 in spend constant with the U.S. Census forecasted population would result in over $17 bn in revenues by 2025.

That said, we view this estimate as somewhat conservative, as we can envision a scenario where a consumer that uses a CBD tincture or capsule, may also be inclined to convert his or her beauty regimen to include CBD (e.g., CBD infused beauty products), and or use a topical for targeted relief as well. Our $16 bn estimate assumes the following category contributions:

Figure 3 We Believe CBD Can Be a $16 BN Revenue Opportunity in the U.S. by 2025



Note: $ in mm unless otherwise stated.
Source: Cowen and Company

The Science Of CBD (Nadeau)

The Endocannabinoid System

Cannabis' therapeutic potential is due to this valuable overlap between phytocannabinoids (i.e. plant-derived cannabinoids) and the endogenous cannabinoid system in humans, termed a "therapeutic handshake." However, though THC's activity in the body has been fairly well elucidated (it acts through G-protein coupled cannabinoid receptor 1 and cannabinoid receptor 2), CBD's pharmacokinetics are less well understood (no specific receptor for CBD has been identified).

The scientific understanding of CBD's clinical effects is based mostly on studies in specific indications, like epilepsy. GW Pharma's Epidiolex (highly potent, pure formulation of CBD) was approved by the FDA in 2018 for the treatment of seizures associated with Lennox-Gastaut syndrome and Dravet syndrome, and other companies (Tilray, MMJ Phytotech, Insys) have clinical trials underway in seizure disorders as well. Additional possible indications for CBD products include autism spectrum disorders, psychiatric conditions, diabetic neuropathy pain, fibromyalgia, chronic pain, and back pain; clinical trials in these indications are underway.

Clinical trial results to date demonstrate few adverse effects from oral CBD doses of up to 1500 mg/day or up to 30mg IV. Specifically, CBD studies have not reported effects on blood pressure, heart rate, or respiratory rate, and no negative changes in mood or psychomotor slowing. Some studies (such as GW's in Epidiolex) have shown side effects resulting from high doses of CBD (~2g/day) inhibiting hepatic drug metabolism, prompting increased blood levels of some background medications. Additionally, *in vitro* studies have shown CBD to be pro-apoptotic in lymphocytes and to inhibit IL8 and IL10 production, suggesting that it may suppress the immune system. However, though unknowns remain, the summation of pre-clinical and clinical data suggest that the compound is safe at typical doses seen in over the counter products (5-10mg).

Additionally, other cannabinoids (found in CBD distillate) have been discovered that may have differentiated pharmacological effects. For example, cannabidivarin (CBDV) may have differentiated anticonvulsant effects, tetrahydrocannabivarin (THCV) may have anti-diabetic and appetite suppressant effects, cannabidiol-acid (CBDA) may have anti-nausea effects, and bannabigerol (CBG) may have anti-cancer effects. Further research is needed to elucidate the clinical effects of these compounds.

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CBD Hemp Cultivation (Neivert)

2018 Farm Bill Legalizes Commercial Cultivation of Hemp: The 2018 Farm Bill legalized industrial hemp at the federal level removing it from schedule I status under The Controlled Substance Act. The bill defines industrial hemp as a variety of cannabis with a THC concentration of </=0.3% and allows farmers to grow and sell hemp under state regulation. According to the National Conference of State Legislatures, 41 states have set up cultivation and production programs to regulate the production of hemp. (CT, ID, SD, IA, OH, TX, LA, MS and GA do not currently allow hemp cultivation.)

Hemp is currently being grown under state Industrial Research Pilot Programs. Once USDA rules are released, pilot programs may end in favor of USDA rules and rules of state programs approved by the USDA.

Prior to the 2018 Farm Bill, the 2014 Farm Bill allowed universities and state departments of agriculture to conduct hemp research under Agricultural Pilot Programs in an effort to evaluate industrial hemp as a commercial crop. The bill allowed states to begin research on best methods for hemp cultivation.

Cultivation Practices Of Hemp Dependent On Intended Harvestable Component

Hemp is grown for fiber, grain/seed and floral materials with different varieties of hemp planted for each component. Fibers are used in rope and textiles, grain is used in human food (not legal for animal feed), pressed seed oil from grain is used like sunflower seed oil, and oils, including CBD, are removed from floral materials for health supplements.

Cultivation practices differ for fiber, grain/seed and CBD in an effort to maximize the yield of the desired harvestable component. U.S. states have conducted pilot programs in recent years to help gain a better understanding of best practices.

Limited Research Available On CBD Hemp Cultivation

There is little research on CBD hemp cultivation methods as hemp cultivation research historically has focused on fiber and grain/seed. This lack of research, combined with a number of variables that impact hemp for CBD yield, makes hemp for CBD cultivation much more art than science at this point. Cultivation methods have been described as all over the map. That being said, we detail methods from recent academic research studies and conversations with industry participants below. (The University of Kentucky and University of Vermont have both conducted research in CBD hemp cultivation in recent years but further research is needed for conclusions regarding proper production techniques.)

Hemp CBD Cultivation Steps:

- **Obtain a license.** Growers must obtain a grower license from their state department of agriculture for the specific type of hemp they want to grow.

- **Find a buyer/processor.** Growers then need to find a buyer/processor for their harvest as crops can only be sold to licensed processors.

- **Source seeds or clones.** The grower must acquire seeds or transplants. Clones (rooted cutting of a plant) can be used instead of seeds. The key factor in selecting seeds or clones is understanding which strains produce flowers with high CBD concentrations while keeping THC at </=0.3% since CBD and THC are positively correlated which caps the CBD level. (A crop that exceeds 0.3% THC

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will be destroyed.) Seeds that are certified (sold by domestic and international hemp seed distributors) contain </=0.3% THC or produce hemp with </= 0.3% THC.

CBD is more concentrated in female flowers (3%-6%) compared to male flowers making male seeds unwanted. Unfertilized female flowers have been found to produce higher CBD levels than female flowers fertilized by male plants making male seeds unwanted in a production field. We note that seed mix (male and female) costs are significantly lower than feminized seed costs (incremental work is needed to increase the supply of feminized seeds).

Conversations with industry participants indicate that clones (first grown in a greenhouse and then transplanted to the field) are becoming more common as they provide a cheaper path to all female flowers in the field. Retail clones can cost $4-$7 each and can be produced for $3 each with access to a greenhouse.

- **Test soil for contaminants.** We note soil that has been used for corn production has been cited as supportive for maximizing hemp yields.

- **Water System Installation.** A drip irrigation is most effective way to water hemp as it allows roots to breathe and conserves the most water.

- **Pesticides:** Currently, pesticides are illegal for industrial hemp cultivation which makes plastic mulch an important step. So far, disease pests and insects have not been found to significantly impact yields.

- **Fertilizer.** Fertilizer requirements similar to wheat are considered adequate with nitrogen the most critical.

- **Planting.** Adequate soil moisture and temperature (>/=50°F), which influences timing for planting, is recommended for successful germination. Industrial hemp can be planted in late April in Kentucky and late June in Vermont. Planting depth for seeds should be ~0.50 inches.

  Female seedlings, started in a greenhouse approximately 6 weeks prior to planting, or transplanted female clones (planted with root structure), can be planted into black plastic outdoors to control weeds. 5 ft x 5 ft plant spacing has been found to be ideal and results in a population of 1,742 plants per acre.

- **Harvest.** Average time to harvest a 6 inch clone is 90-120 days, Flower buds from outdoor plants are removed by hand or using a debudder machine after using a chainsaw or lopper to cut the plant down. Flower bud harvest is labor intensive and can take ~30 hours per acre. Flower buds in a UVM study were dried at 80°F for 18-36 hours until dry enough for storage without molding. Indoor storage requirements creates a production challenge. As with most crops, variations in yield can result from variations in genetics (variety), soil, weather, and other growing conditions.

- **Testing.** State Departments of Agriculture conduct field and greenhouse inspections for THC levels, which is the only way to separate hemp from illegal cannabis. Crops that test >0.3% THC will be destroyed.

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Wide Range Of Returns On CBD

There is little data on economics for hemp CBD cultivation given wide range of outcomes that can result on the seed vs clone decision (CBD levels vary for each and will impact cost), as well as the type of production model used. The University of Kentucky (College of Agriculture) recently published six budget models for industrial hemp producers. Four of the six budgets address CBD hemp, with a separate budget for grain and another for fiber. We highlight the University of Kentucky's CBD Plasticulture budget model below since it is the most profitable and will likely be the most commonly implemented. We note all four of the CBD hemp models indicate a positive return above variable costs per acre while hemp grain and hemp fiber do not reach breakeven due to low pricing for both harvestable components..

University Of Kentucky's Budget Assumptions For CBD Plasticulture:

- **Dry matter yield per acre:** UK estimates 1,200 lbs of dry matter yield produced per acre based on 1,500 plants per acre (recall 5 ft. 5ft. allows for up to 1,742 plant per acre) and 0.8 lb of dry matter yield per plant (yield per plant can range from 0.5 lb-1.5 lbs).

- **Gross return per acre:** CBD concentration and price per % are the factors that determine the price of dry matter yield/lb. In the below example, 6% CBD% * $5.00 per % = $30/lb. Gross return per acre is then calculated by multiplying dry matter yield/lb by dry matter yield/acre (1,200).

- **Variable cost per acre:** 72% of variable cost per acre is for clone transplants for 1,500 plants at $5.00 each. Other notable costs include planting, plastic to protect against weeds, drip line for water, harvesting costs, cash rent and application/test fees. We note clones currently can range from $3.50-$5.50 per plant. Clones have become more common than seeds in Kentucky as they offer an easy way to produce female plants. A seed mix may be cheaper but would include male seeds than can potentially pollinate female seeds and negatively impact CBD concentration which influences pricing for dry matter yield. Feminized seeds are an option but will likely be the most expensive option. We note that the model assumes outdoor production rather than greenhouse production since a greenhouse is efficient for clone production (then transplanted to the field) but prohibitive for plant production.

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Figure 4 – CBD Plasticulture Model – University of Kentucky

	Quantity	Unit	Price	Total
CBD%	6%	-	-	-
Price per %	$5.00	-	-	-
Dry Matter Yield	1,200	lb	$30	$36,000
Gross Returns Per Acre	-	-	-	**$36,000**
Transplants (clone)	1,500	plants	$5.00	$7,500
Fertilizer				
-Nitrogen (urea)	100	unit	$0.47	$47
-Phosphorus (P2O5)	30	unit	$0.60	$18
-Potassium (P2O)	45	unit	$0.38	$17
Planting/Setting	1,500	plants	$0.20	$300
Black Plastic/Drip Line	1	acre	$515	$515
Harvest Cost	32.4	hrs	$12.50	$405
Cash rent	1	acre	$300	$300
Application & License Fee	1	per year	$400	$400
Lab Test	1	-	$300	$300
Other	-	-	-	$669
Total Variable Cost Per Acre	-	-	-	**$10,471**
Margin Over Variable Cost Per Acre	-	-	-	**$25,529**

Source: hemp.ca.uky.edu, Cowen and Company

Sensitivity Analysis For CBD Plasticulture Model. As shown below, there is a significant change in return for every $1 change in price per CBD%. A deterioration of this pricing with no corresponding change in cost would impact CBD production. Breakeven for the model above is ~$9/lb for dry matter yield compared to the $30/lb used to calculate the margin over variable cost per acre used. While price % CBD can fluctuate, the second factor determining the dry matter yield/lb price is CBD%.

Figure 5 – Sensitivity Analysis

Price per % CBD	Total Revenue	Returns Above Variable Costs
$6	$43,200	17,671
$5	$36,000	10,471
$4	$28,800	3,271
$3	$21,600	-3,929
$2	$14,400	-11,129
$1	$7,200	-18,329

Source: hemp.ca.uky.edu, Cowen and Company

CBD Hemp Clearly An Attractive Option For Growers. No other crop in the U.S. offers the type of return of the CBD Plasticulture Model. We would expect the two largest crops in the U.S.: corn and soybeans to lose some acreage to CBD hemp, though given corn and soybean area planted was 89.1M and 89.2M acres respectively in 2018. (Total planted acres in the U.S. is ~320M acres.)

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Figure 6 – 2017 Production Less Operating Costs Per Acre (Cash Grower Margin/Acre)

per acre	Corn	Soybeans
Gross Value of Production	$620	$455
Operating Costs		
Seed	$99	$58
Fertilizer	$116	$25
Chemicals	$35	$27
Other Operating Costs	$85	$48
Total Operating Costs	$335	$158
Cash Grower Margin	**$285**	**$297**

Source: USDA, Cowen and Company

Kentucky Hemp Growth Provides An Indication For Near-Term Acceleration

Figure 7 shows hemp production in Kentucky under Kentucky Department of Agriculture (KDA) Industrial Hemp Research Pilot Program. The figure shows the increase in planted acres in 2018 (Sept) as well as the shift toward CBD as a percentage of total hemp (planted acres for CBD rising to 4,121 acres in 2018 from 864 in 2017). In 2018, there were 158 greenhouses in Kentucky representing 764,000 sq. ft., which is included in the 2018 acreage below. (Note 1 acre = 43,560 sq. ft.)

On January 22, 2019, the Kentucky Department of Agriculture approved 1,035 applications to cultivate up to 42,086 acres of industrial hemp in 2019, up from 16,100 acres in 2018 and 33 acres in 2014, which was the first growing year. (67 acres of greenhouse space was also approved for hemp cultivation.) We note that of the 16,100 acres approved in 2018, less than half (6,700) was planted.

Figure 7 – Kentucky Department of Agriculture Industrial Hemp Research Pilot Program

Production Year	Approved Processors	Approved Growers	Approved Acres	Planted Acres	Harvested Acres	% of Grain or Seeds	% Fiber	% CBD	% CBD & Grain	% Grain & Fiber
2014	9	20	-	33	-	47%	32%	21%	0%	0%
2015	29	99	1,742	922	500	47%	6%	47%	0%	0%
2016	45	137	4,600	2,300	2,000	34%	6%	60%	0%	0%
2017	49	204	12,800	3,200	2,300	36%	5%	27%	32%	0%
2018 (Sept)	72	210	16,100	6,700	TBD	18%	4%	62%	14%	2%
2019	N/A	N/A	42,086	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: kyagr.com/hemp, Cowen and Company

Outlook For Growth

The expected growth for hemp is supported by the economics offered. However, there are limitations related to required cultivation methods.

Conversations with industry experts estimate planted hemp acres in 2019 could reach 200,000, up from 78,176 in 2018. The growth is supported by expansion like Kentucky's and new states entering the market (only 23 states participated in 2018).

Figure 8 – U.S. Planted Hemp Acres – 2017 and 2018

State	2017	2018
Montana	542	22,000
Colorado	9,700	21,578
Oregon	3,469	7,808
Kentucky	3,271	6,700
Tennessee	200	3,335
North Carolina	965	3,184
North Dakota	3,020	2,778
New York	2,000	2,240
Nevada	417	1,881
Wisconsin	0	1,850
Vermont	575	1,820
Minnesota	1,205	710
Pennsylvania	36	580
Maine	30	550
Oklahoma	0	445
South Carolina	0	256
West Virginia	14	155
Washington	175	142
Virginia	87	135
Massachusetts	0	21
Indiana	5	5
Hawaii	1	2
Nebraska	1	1
Total	**25,713**	**78,176***

* Includes 232 acres of greenhouse or indoor cultivation

Source: votehemp.com, State Departments of Agriculture, Cowen and Company

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Challenges For Growth

We see several issues that we expect will moderate growth of hemp CBD in years to come. As a commodity, we see economics diminishing as CBD supply rises with increased acres along with higher costs for seed from increased seed demand. We also see a lack of best practices for cultivation, storage restrictions and uncertainty about the consistency of seeds/clones available increasing the probability that yields are compromised.

Synthetic Cannabis (Schenkel)

The Broad Spectrum Of Cannabinoids

Cannabinoids fall into three main types: (1) endogenous cannabinoids, which are produced naturally in the bodies of humans and animals; (2) phytocannabinoids, which are isolated from plants; and (3) synthetic cannabinoids, which are produced in the laboratory and may have some structural deviations from the naturally occurring molecules.

Of the three types, phytocannabinoids have garnered a lot of interest because of their therapeutic and recreational potential. For example, Marinol and Syndros, which the FDA cleared for the treatment of anorexia associated with weight loss in AIDS patients, include the active ingredient dronabinol, a synthetic delta-9- tetrahydrocannabinol (THC) which is considered the psychoactive component of marijuana. In June 2018, the FDA approved an oral formulation of cannabidiol (CBD), Epidiolex, which GW Pharmaceuticals PLC developed for the treatment of seizures associated with two rare and severe forms of epilepsy in children.

In addition to THC and CBD, more than 100 other phytocannabinoids have been identified from the cannabis plant. This includes lesser-known compounds such as tetrahydrocannabivarin (THCV), cannabigerol (CBG), and cannabichromene (CBC).

The broad spectrum of phytocannabinoids can bind to a range of different receptors in the human body and induce a wide variety of pharmacological responses. However, due to the limited research into these varying effects, a full understanding of the role of each cannabinoid compound is still poorly understood. With that said, some of the most studied roles are listed in the table below.

Figure 9 Approved & Potential Medicinal Roles Of Selected Phytocannabinoids

Cannabinoid	Percent Of Total Cannabinoid Content	Role
Tetrahydrocannabinol (THC)	15-35%	• Psychotropic • FDA-approved as appetite stimulant for people with AIDS and antiemetic for people receiving chemotherapy • Alleviates neuropathic pain, spasticity, overactive bladder, and other symptoms
Cannabidiol (CBD)	1-12%	• FDA-approved for treating rare seizure disorders • Chronic pain treatment • Being studied for treatment of anxiety, post-traumatic stress disorder, pain, schizophrenia, Parkinson's disorder and Huntington's disorder
Tetrahydrocannabivarin (THCV)	<1%	• Potential anxiety relief • Potential appetite suppressant
Cannabigerol (CBG)	<1%	• Potential anti-inflammatory • Potential anti-cancer
Cannabichromene (CBC)	<1%	• Potential anti-inflammatory • Potential anti-cancer • Potential GI motility modulator

Source: Cowen and Company

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Need For Alternative Methods To Produce Cannabinoids

Cannabis plants can exhibit wide variation in the quantity and type of cannabinoids they produce. However, cannabinoids are only produced in limited quantities regardless of the strain; in total, cannabinoids account for <1% of the dry weight of the cannabis plant.

Selective breeding has led to strains of the cannabis plant that produce relatively large amounts of the intermediary forms of THC and CBD. While THC content varies substantially among cannabis strains, it generally represents 15-35% of the cannabinoid content of the plant, and CBD is typically 1-12%. The relative abundance of these compounds have allowed them to be well studied and their diversity of applications have created a large commercial market.

After THC and CBD, the remaining cannabinoids are found only in trace amounts in the plant. Compounds such as THCV, CBG, and CBC have elicited therapeutic interest, but because they are only present in minute amounts they have been difficult to extract and purify and impossible to produce at commercial scale. This has limited their study up to this point.

Alternative Methods For Producing Cannabinoids

To combat the limited availability of cannabinoids using cultivation-based methods, alternative approaches have been developed that use chemical and biotechnological synthesis to produce cannabinoids.

Chemical Synthesis

Chemical synthesis methods use organic chemistry to produce cannabinoids; however, the process has several drawbacks. Chemical methods have largely failed to be cost effective for commercial scale cannabinoid production because of the complexity required to produce the cannabinoid molecules, and extensive purification is needed to obtain a high quality product. Commercial chemical synthesis also generates large amounts of organic waste, takes several weeks to produce kilogram quantities, and is expensive. As such, practical methods for the chemical synthesis of many cannabinoid molecules has not been developed.

Biotechnological Synthesis (Synthetic Biology)

An emerging alternative to traditional cultivation and chemical synthesis is the use of biotechnology-based approaches to produce cannabinoids. These synthetic biology approaches produce cannabinoids through modifying the metabolism of genetically engineered organisms. This converts the organism into a biological factory, producing the desired cannabinoid in large quantities.

Compared to chemical methods, biosynthesis methods are more cost effective, scalable, and environmentally friendly.

Compared to traditional methods, biosynthesis of cannabinoids is potentially more sustainable, more reliable, faster, and less expensive. Biosynthesis does not require as much water or energy input, is not subject to weather or other exogenous factors, takes ~3-5 days to yield an end product vs. traditional methods taking up to 4 months, and is theoretically less expensive. Additionally, growing cannabis often involves using several hard-to-remove impurities (e.g., pesticides), that could potentially create significant safety issues and other undesirable dynamics. Furthermore, purity and regulatory

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controls can be implemented when producing compounds with a biosynthesis method similar to the processes in place for pharmaceutical regulation.

The many perceived advantages of synthetic cannabinoid creation have led to a series of companies entering the market, as described below.

Figure 10 Selected Synthetic Biology Cannabinoid Companies

Company	Notes
Cellibre	Cellibre is a next-generation cellular agriculture company. Employing an organism-agnostic approach, Cellibre turns cells into specialized, sustainable factories for the manufacture of globally significant products at scale.
Ginkgo Bioworks	Ginkgo is a Boston-based company that designs custom microbes for customers across multiple markets, developing new organisms that replace technology with biology.
Hyasynth Biologicals	Located in Montreal, Hyasynth Biologicals uses the technologies from traditional and modern biology combined with computational analysis to develop organisms at the fastest possible speed.
InMed Pharmaceuticals	InMed Pharmaceuticals is a biopharmaceutical company that specializes in the discovery and development of novel, cannabinoid-based therapeutics for the treatment of diseases with high unmet medical need.
Librede	Librede has developed a yeast-based cannabinoid production and drug discovery platform to create chemical compounds that target the endocannabinoid system. Librede's modular technology enables large scale production of natural cannabinoids in a more economic and environmentally sustainable way
Renew Biopharma	Renew Biopharma harnesses the biological pathway to produce natural and novel cannabinoids that cross the blood brain barrier and target specific receptors associated with neuroinflammation and chronic pain.
Teewinot Life Sciences	Tampa-based Teewinot combines its biosynthetic processes with sophisticated chemical synthesis to produce proprietary cannabinoid analogs and prodrugs at commercial scale.
Amyris	Amyris is an industrial biotechnology company that has used sugarcane fermentation to create hydrocarbon molecules and produces an array of specialty ingredients and consumer products.

Source: Cowen and Company

Producing Cannabinoids Using Synthetic Biology

Synthetic biology methods use fermentation to produce cannabinoids with identical chemical structures to those found in plants.

Biocatalytic Cannabinoid Pathways

The first step of the synthetic cannabinoid production requires identification and extraction of the desired cannabinoid biosynthetic pathways from a cannabis varietal. The biosynthesis of cannabinoid molecules in a microbe could require four or more cannabinoid metabolic pathways. When the pathways are selected, their corresponding DNA sequences need to be cloned from the cannabis varietal and spliced into the microbial DNA.

Cannabinoids could be produced biocatalytically using the following mechanism:

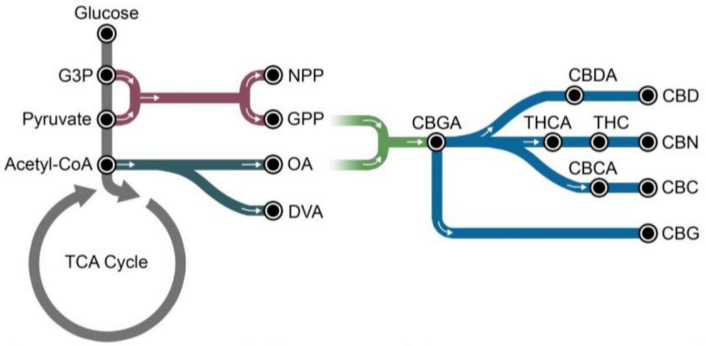
i. In the first pathway, glucose is converted into G3P and pyruvate via glycolysis. These two compounds are then utilized to produce the precursors geranyl pyrophosphate (GPP), and/or neryl pyrophosphate (NPP).

ii. Glycolysis of glucose also produces Acetyl CoA, which can catalyze biosynthesis of the second group of precursors: olivetolic acid (OA) and divarinic acid (DVA).

iii. Various combinations of the aforementioned precursors then combine in the third pathway to yield parent cannabinoid molecules (e.g., cannabigerolic acid or CBGA).

iv. These parent cannabinoids are then modified in the fourth pathway to produce cannabinoids such as tetrahydrocannabinolic acid (THCA) and cannabidiolic acid (CBDA). These acids can be transformed into a non-acid form using synthases, producing the terminal cannabinoid form.

Figure 11 Biosynthetic Cannabinoid Production Pathways



Source: Cowen and Company

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Cannabinoid Production Using Fermentation

To power the aforementioned pathways, water and glucose (or a cannabinoid substrate) are added to the microbe (e.g., yeast) in a bioreactor. Under fermentation, the yeast will consume the glucose and produce the desired cannabinoid.

This culture is incubated for ~3-5 days to produce sufficient cannabinoid intermediaries. Afterwards, the fermentation mixture is separated and combined with a non-toxic solvent to extract and purify the cannabinoids.

Recent Cannabinoid Partnerships In Synthetic Biology

With the recent legalization of cannabis in several countries and U.S. states and growing acceptance of its utility, many recent notable partnerships have been created on the potential of synthetic cannabinoid production. We highlight two such agreements from the past few months below.

Amyris / Undisclosed Partner (February 2019; Valued Up to $255MM)

In February 2019, Amyris announced that it has signed an agreement for cannabinoid development, licensing, and commercialization in a partnership valued at up to $255MM (not including royalties for commercial products) with an undisclosed partner. The $255MM in payments include an upfront payment and the remainder is linked to milestones that are expected over the next 12-36 months. The partner is expected to provide initial, lab-based and later commercial-scale milestone cash payments in tranches for the development and scaling of technology to produce CBD.

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Cronos Group / Ginkgo Bioworks (September 2018; Valued Up to $122MM)

Cronos Group is a vertically integrated Canadian cannabis company that operates two licensed producers. In addition, the company has developed an assortment of cannabis varietals and has amassed an extensive database on various cannabinoids and their properties. Boston-based Ginkgo Bioworks is a synthetic biology company that has developed a cutting edge, automated platform for biological engineering and fermentation. Using synthetic DNA to modify yeast and other organisms, the company endeavors to produce large amounts of various rare strains through this more efficient, lower-cost, novel process. Indeed, as we asserted in the MO/CRON note (link), we believe that this strategic partnership was integral in informing the entry of the largest tobacco player in the U.S., into the legal global cannabis market.

By way of background, in September 2018, Cronos and Ginkgo announced an agreement to produce cultured cannabinoids. Ginkgo is tasked with developing strains of yeast that can produce eight target cannabinoids. Cronos would then handle large scale production and distribution of those cultured cannabinoids. The total agreement is valued at $122MM; this includes $22MM to fund R&D, and up to $100MM of CRON common shares in tranches in accordance with production milestones. More specifically, the tranches will be issued once each of the target cannabinoids can be produced for less than $1,000/kg of pure cannabinoids at a scale of >200 liters as follows: THC (20%), CBD (15%), THCV (15%), CBC (10%), CBG (10%), CBGV (10%), CBDV (10%), and CBCV (10%). Cronos and Ginkgo expect to reach the milestone for these eight strains within three years.

Figure 12 Cronos and Ginkgo Partnership to Produce Eight Targeted Cannabinoids at Scale

	Milestone Shares Issued	
Target Cannabinoid	Shares	%
THC(A)	2,934,981	20%
CBD(A)	2,201,235	15%
CBC(A)	1,467,490	10%
CBG(A)	1,467,490	10%
THCV(A)	2,201,235	15%
CBGV(A)	1,467,490	10%
CBDV(A)	1,467,490	10%
CBCV(A)	1,467,490	10%
Total	**14,674,903**	100%

Source: Cowen and Company

Life Science Tools Participation In The Legal Cannabis Market (Schenkel)

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Life science tools companies currently participate in the cannabis market primarily through providing instruments and equipment that: (1) extract active cannabis ingredients from leaves and seeds and (2) analyze cannabis products for potency and contaminants. According to one of our consultants who runs a cannabis testing laboratory, separations instrumentation including liquid chromatography (LC) and gas chromatography (GC), and mass spectrometry (primarily single quadrupoles, triple quadrupoles, and inductively coupled plasma mass spectrometers) are the primary technologies used in cannabis testing. We note that the cannabis testing opportunity is not limited to LC, GC, and mass spec technologies – other technologies including genetic analysis tools (DNA sequencers, microarrays, and PCR) could have a greater role in the cannabis industry in the future.

Cannabis Testing Details

There are three major categories of tests used to measure and monitor the quality of recreational and medicinal cannabis products: potency testing, terpene profiling, and contaminant testing. Contaminant testing typically includes testing for the following: (1) pesticides; (2) residual solvents; (3) heavy metals; (4) moisture content; (5) mycotoxins; and (6) microorganisms.

For the most part, standards and regulations for cannabis potency and contaminants testing are still in the infancy stage and vary widely by state – accordingly, testing of cannabis products vary greatly by locality. The aforementioned tests (also in Figure 13) are the most commonly performed tests. These tests are primarily performed using separations instruments and mass spectrometry (see pages 22-23 for details on these instruments and a list of vendors). Figure 13 lists commonly used instruments associated with a specific cannabis test.

Figure 13 Overview Of Cannabis Testing Technologies

Test	Common Analytical Instrument(s) Used
Potency	LC (HPLC or UHPLC), GC
Terpene Profile	GC-MS, LC-UV detector
Pesticides	LC-MS (triple quad), GC-MS (single or triple quad)
Residual Solvents	GC-MS
Heavy Metals	ICP-MS
Moisture Content	Moisture balances, weight loss methods
Mycotoxins	LC-MS (triple quad) or immunoassays
Microorganisms	Mostly culturing, some PCR, few MALDI-TOF
Actives Extraction	Supercritical Fluid Extraction (SFE)

Source: The Analytical Scientist and Cowen and Company

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Background On Separations Technology And Market

Liquid Chromatography And Gas Chromatography – How Does It Work?

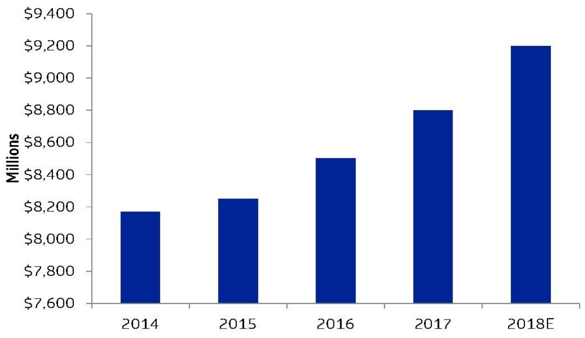
LC instrumentation is generally composed of: (1) solvent delivery system, (2) sample injector, (3) separation column, (4) detector, and (5) data acquisition unit. The solvent delivery unit pumps the solvent through the LC system while the sample injector introduces the sample into the solvent flow (known as the mobile phase). The chromatography column then separates the sample into its components for analysis by the detector, which measures the presence and amount of constituents. The data acquisition unit then records and stores the information from the detector. The underlying principles of GC are similar to those of LC, with the key difference being that the mobile phase is a gas instead of a liquid.

LC Is Often Combined With Mass Spec

To obtain the mass spectrum of a single compound in a mixture, the individual components must be separated prior to MS analysis. Separation is necessary for unambiguous identification because multiple compounds present simultaneously create an overlapping or mixed spectrum. The most common separation techniques used in combination with MS are gas chromatography (GC) and liquid chromatography (LC). LC and MS from different vendors can be combined. LC is more commonly used as high temperatures required for GC make it incompatible with the compounds under analysis - this is a key reason why some cannabis testing labs prefer testing THC using liquid chromatography (to be clear, analysis using gas chromatography requires heating THC which changes its properties).

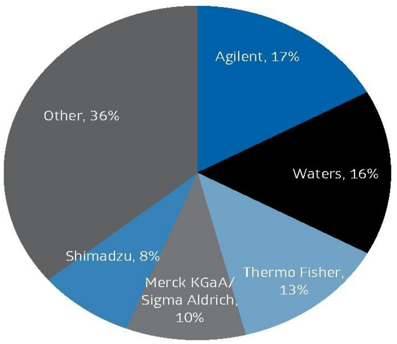
Chromatography Market Estimates

Figure 14 Overall Chromatography Market ($MM)



Source: Company reports and Cowen and Company

Figure 15 Chromatography Market Shares



Source: Company reports and Cowen and Company

Figure 16 Chromatography Market by Configuration

	Market	H/UPLC	GC	IC	LPLC	Flash	Other
Market Share	100%	60-65%	22%	6%	6%	1%	4%
Growth Rate	3-4%	4%	3%	4%	5%	3%	3%
Market Leaders		WAT A	A Shimadzu	TMO Metrohm	GE BIO	Teledyne Biotage	

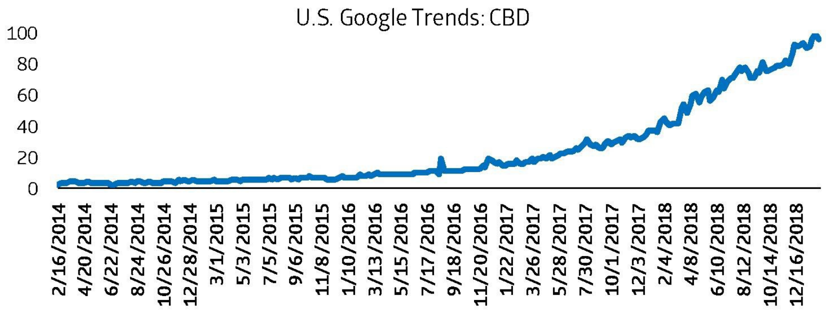
Source: Company reports and Cowen and Company

Consumer Products Opportunities (Azer)

In 2018, the CBD market in the U.S. has been estimated to have generated revenues ranging from ~$600 mm to as much as $2 bn. In our 2019 global cannabis outlook report (here), we had believed the CBD purchases in the U.S. likely skewed to the lower-end of that range. However, with new survey data from Cowen's proprietary consumer survey, we can see that among our ~2,500 respondents (18+) in January 2019 nearly 7% reported using CBD as a supplement. Coupled with the diverse form factors reportedly being used (including close to 20% for beverages, which was surprising to us), we are now inclined to size the current market at closer to $2 bn.

Indeed, looking at Google search trends, we can see that interest looks to have climbed steadily in 2016 and 2017, and accelerated meaningfully in 2018, which has continued into 2019.

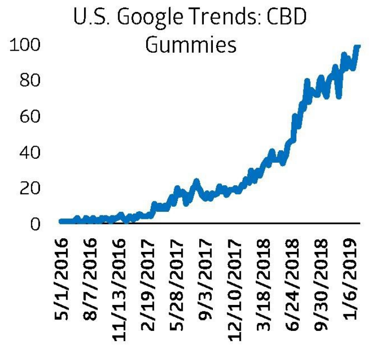
Figure 17 CBD Interest Has Been Increasing



Source: Google Trends and Cowen and Company

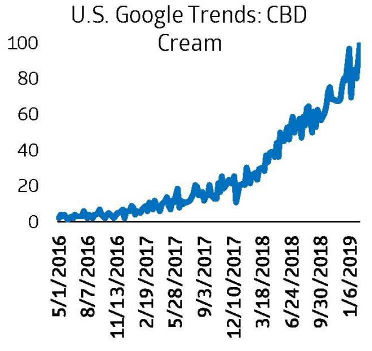
Encouragingly, interest has been rising consistently among different form factors, ranging from supplements like CBD gummies, to topicals and oils. The rising interest and popularity in this broad range of CBD offerings should support a diverse category and multiple competitors that cater to a large base of consumers with different needs, requiring various applications.

Figure 18 Interest Broad Based from Edibles...



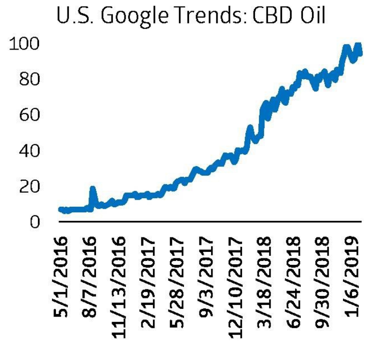
Source: Google Trends and Cowen and Company

Figure 19 ...to Topicals...



Source: Google Trends and Cowen and Company

Figure 20 ...To Oil



Source: Google Trends and Cowen and Company

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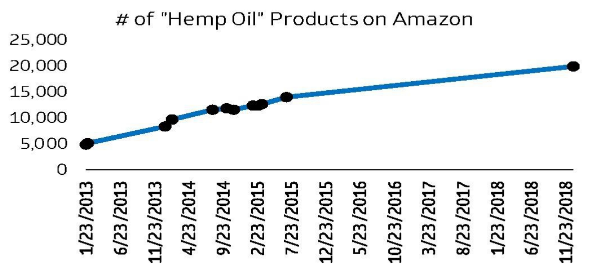
To further reinforce how CBD has been gaining interest over time, we analyzed the historical number of hemp oil products offered by Amazon (AMZN, John Blackledge), where we can see a continued increase in the number of products sold. Indeed, six years ago, Amazon had been offering roughly 5,000 products, which has quadrupled to over 20,000 products today.

Figure 21 Over 20K Hemp Oil SKUs Offered by Amazon Today…

# of Hemp Oil Products on Amazon			
Date	**# of Products**	**Date**	**# of Products**
1/23/2013	4,975	**11/8/2014**	11,587
2/1/2013	5,039	**2/7/2015**	12,370
1/10/2014	8,507	**3/2/2015**	12,430
2/10/2014	9,642	**3/20/2015**	12,741
8/10/2014	11,694	**7/7/2015**	13,963
10/12/2014	11,904	**1/2/2019**	> 20,000

Source: Amazon and Cowen and Company

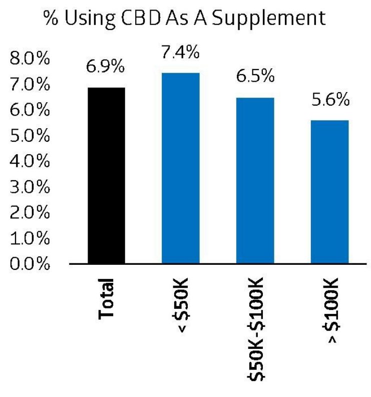
Figure 22 …Which Has Increased 4-Fold Over the Past 6 Years



Source: Amazon and Cowen and Company

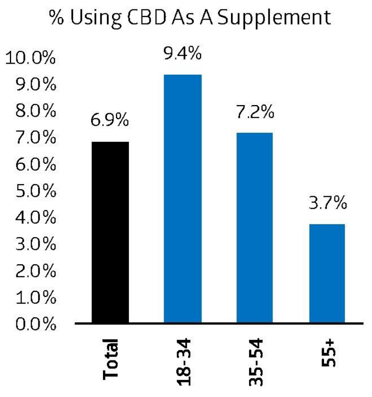
With reported CBD use skewing toward younger consumers, it is perhaps not surprising to see that CBD also over-indexes to lower-income consumers (where younger consumers generally have lower household incomes). What is more, CBD seems to be the most popular among Caucasians, following by Hispanic / Latino consumers. Meanwhile, CBD use is slightly more popular among women (7.0% incidence), vs. men (6.7% incidence).

Figure 23 CBD Over-Indexes with Low-Income…



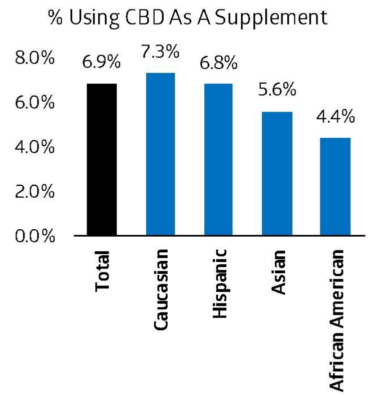
Source: Cowen Survey, N=~2500, January 2019

Figure 24 …Young Consumers (Ages 18-34)…



Source: Cowen Survey, N=~2500, January 2019

Figure 25 …And Caucasians



Source: Cowen Survey, N=~2500, January 2019

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Given increasing interest, younger consumer demographic trends, and a lack of paid advertising within the space, below we offer a snapshot of the Instagram landscape as a proxy for current company social media activity. We would caveat that this is not an exhaustive list, nor does the below chart factor in the impact of influencer marketing, which is a popular trend in order for these companies to drive brand momentum. That said, we believe the below chart reflects the competitive nature of the category as we are already starting to see momentum from less known, emerging brands.

Of the companies analyzed, the below chart reflects the top 17 brands by absolute Instagram followers, while also providing data on the absolute number of posts over the month of January, as well as the average number of likes per post.

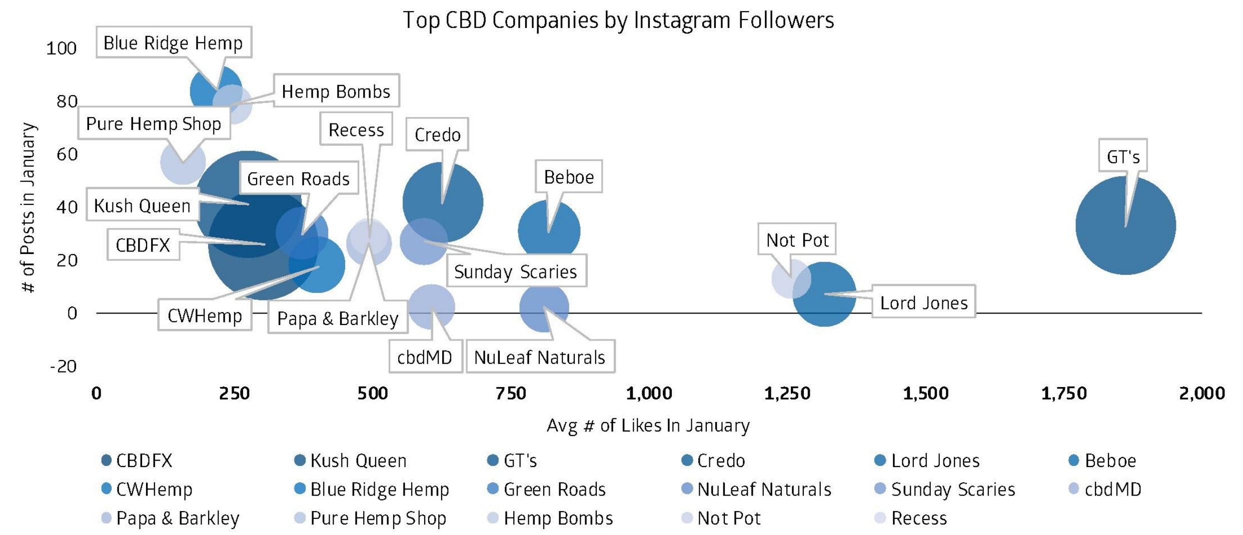
Absolute Followers. As it currently stands, three companies have an Instagram following of over 100K people, with CBDFX leading the pack at 181K. Kush Queen and GT's Kombucha also look to be well positioned with 168K and 145K followers, respectively.

# of Posts. Blue Ridge Hemp was the most active over the month of January with 84 posts, followed closely by Hemp Bombs (79 posts) and Pure Hemp Shop (57 posts). Across the competitive set, the average number of posts for the month of January was 32.

Avg Likes Per Post. In addition to having one of the largest number of absolute followers, GT's Kombucha also led the way in average likes per post (1,863). This was followed by super premium CBD company, Lord Jones, with 1,318 average likes per post. Not Pot rounded out the top three with 1,257 average likes per post.

We would note that while we consider the below analysis useful in terms of analyzing social media activity, it should not be used as a proxy for market leadership. Publicly traded companies such as Charlotte's Web, CV Sciences and Elixinol have established themselves as market leaders within CBD, based on distribution / market penetration, consumer awareness, and brand equity.

Figure 26 Instagram Analysis Reflects Competition From Emerging Brands



Source: Instagram and Cowen and Company

Note: Bubble size reflects relative number of Instagram followers

From a consumer staples perspective, we see innovation across a host of form factors. To analyze the category's potential, we focused on six specific consumer product categories, including:

i. Nutraceuticals (tinctures, capsules, sprays, and gummy vitamins)

ii. Topicals (for targeted pain relief, like Tiger Balm)

iii. Beverages (water, energy drinks and beer)

iv. Food (including confections and bars)

v. Vapor

vi. Beauty (including skin care, serums, lotions, and bath products)

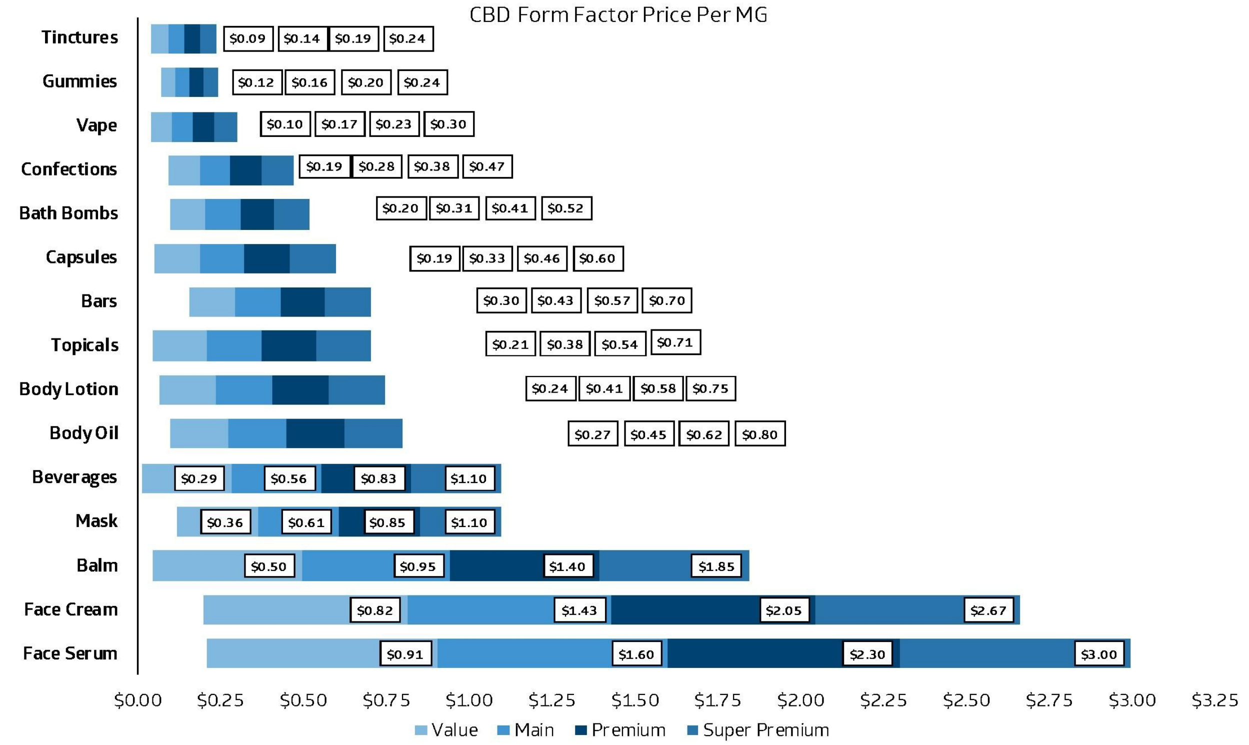
While our analysis was far from exhaustive, below we:

i. Break down the above product categories by sub-segment to benchmark pricing, which we define as value, main, premium and super-premium,

ii. Forecast run rate revenues by vertical over the next two years,

iii. Offer company-specific detail on numerous private and public companies as part of our research on the CBD opportunity (primarily in the U.S.).

Figure 27 Beauty Products Carry the Most Premium Pricing, While Tinctures and Gummies Offer the Best Value Proposition in Terms of Price / MG of CBD



Note: Price boxes represent the high-end of the form factor's respective price segment.

Source: Company Websites and Cowen and Company

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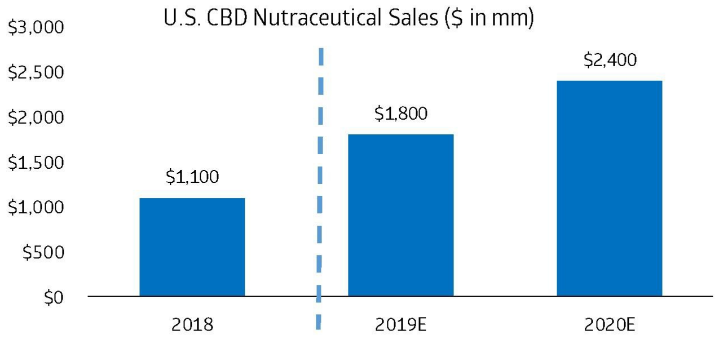
Nutraceuticals

Given robust consumer interest in CBD products, we estimate that over the next two years, the nutraceuticals category (which includes tinctures, capsules, gummy vitamins, etc.) can generate revenues of $2.4 bn. Uncertainty around the timing of this revenue ramp reflects a lack of clarity on how quickly retailers, in particular mass market retailers, will begin to stock the products following the passage of the 2018 Farm Bill.

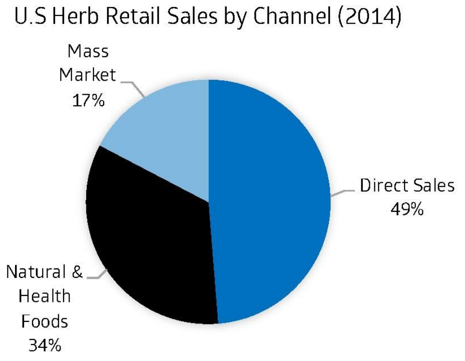
Figure 28 We Estimate CBD Nutraceuticals Can Generate ~$2.4 BN in Sales Going Forward



Source: Cowen and Company

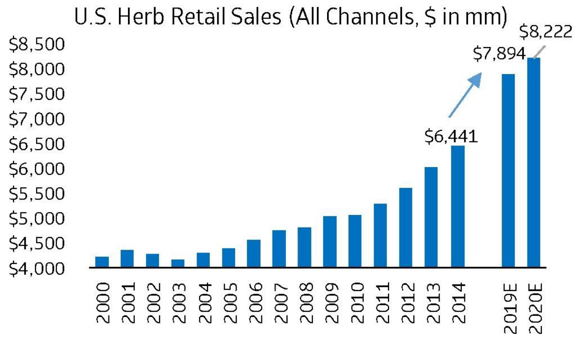
Our $2.4 bn estimate is benchmarked against the herbal supplement market in the U.S. According to the American Botanical Council, herbal supplement retail sales were $6.4 bn in 2014, posting the 11th year of consecutive growth. Between 2004-2014, the herbal supplement category grew its revenues at a ~4.2% CAGR. Extrapolating that growth out to 2019 would imply a total herbal supplement market of ~$8 bn over the next two years. Our $2.4 bn estimate for the CBD market would imply almost a 30% share of this market by 2020. The importance of retail adoption is reflected in the category makeup of the herbal supplement market, where we can see that over 17% of sales come from mass market retailers.

Figure 29 Mass Market Makes Up ~17% of Herb Retail Sales



Source: American Botanical Council and Cowen and Company

Figure 30 Herb Retail Sales To Exceed ~$8 BN Assuming 4.2% CAGR



Source: American Botanical Council and Cowen and Company

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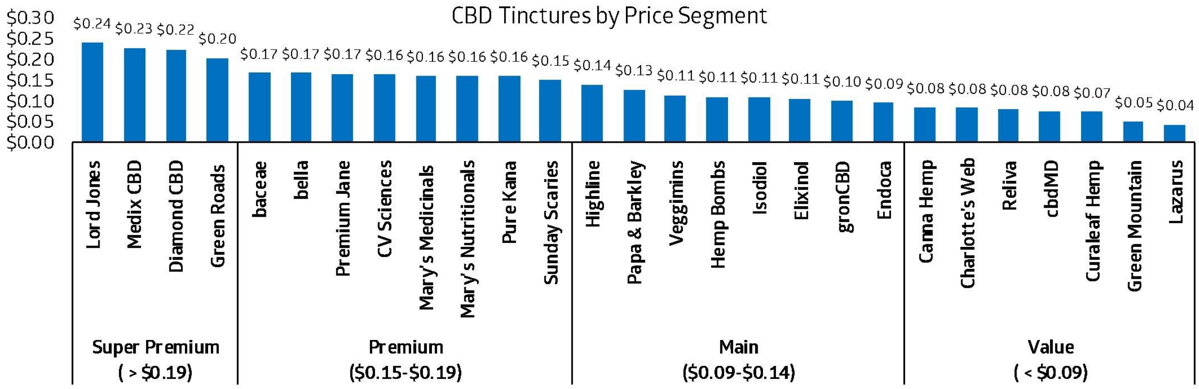
Tinctures are the market leading form factor within CBD, which is reflected in the absolute number of companies that play across different price segments. On a price / mg CBD basis, Lord Jones leads the pack on premium pricing, with its tincture priced at $0.24 per mg of CBD. Lazarus falls at the opposite end of the price spectrum at $0.04 per mg of CBD. The vast number of price points throughout this segment reflects an abundance of choice for the consumer, providing options for all income cohorts.

Figure 31 Notable Competition Within Tinctures Segment

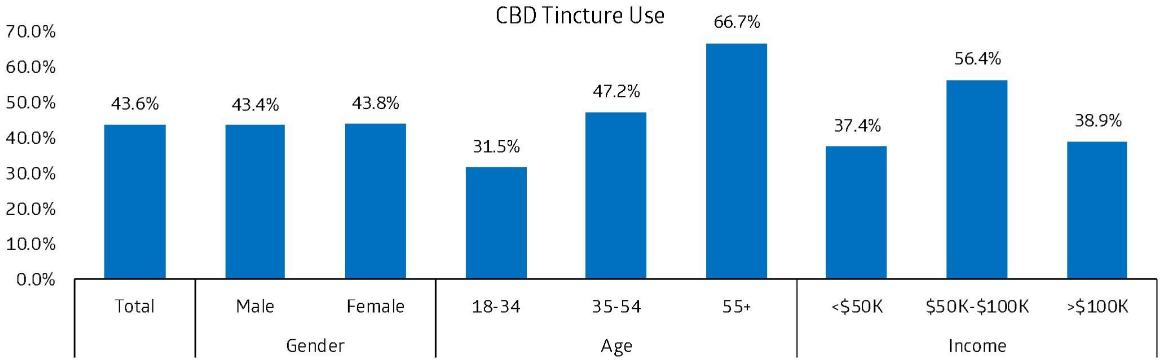


Source: Company Websites and Cowen and Company

Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

In our consumer survey, of respondents who use CBD, 44% of people use tinctures as a form factor, which looks to be equally popular among both male and females. Interestingly, tincture use looks to be the most prevalent form factor among older consumers, as two-thirds of respondents within this cohort indicated use of a tincture. Tinctures look to be the most popular form factor across all income demographics, with over 50% of people using within the $50K-$100K segment.

Figure 32 Tinctures Are The Most Popular Form Factor



Source: Cowen Survey, N=~2500, January 2019

Figure 33 Lord Jones Price Point Reflects Premium Positioning

HIGH CBD
PAIN & WELLNESS FORMULA
TINCTURE
LEMON
PEPPERMINT
LORD JONES
30 mL 1 FL OZ

Source: Company Reports

Figure 34 CV's Plus CBD Oil Competitively Positioned Within Premium

PLUS
+CBD oil
Gold Formula
Unflavored
DIETARY SUPPLEMENT | 1 fl oz
CV SCIENCES
Supplement Facts

Source: Company Website

Figure 35 Papa & Barkley Currently Offer Tinctures Only

PAPA & BARKLEY
ESSENTIALS
Hemp
EXTRACT DROPS
DIETARY SUPPLEMENT
1 OZ. / 30ML

Source: Company Website

Figure 36 Reliva Tinctures Compete On Value

NEW
reliva
mint
CBD
TINCTURE
250 mg
RELAX
0% THC
DIETARY SUPPLEMENT
1 oz (30 ml)

Source: Company Website

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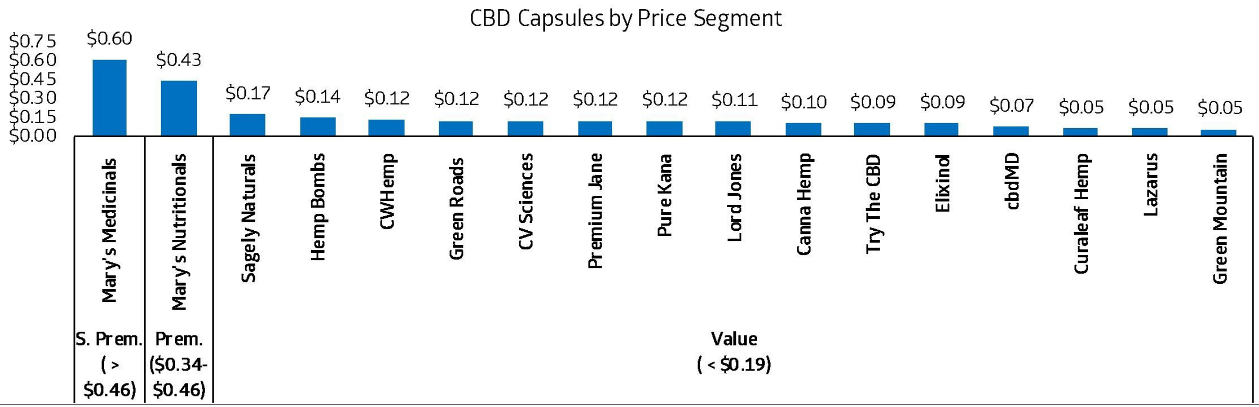
Along with tinctures, capsules represent one of the more mature form factors within CBD. Mary's looks to be squarely positioned as the most premium brand across all companies analyzed, in particular for their Elite capsule line, which offers 150 mgs of CBD and retails for $90. For context, the closest price point to Mary's comes from Sagely Naturals at $0.17 per mg. Brands look to be very competitively priced in terms of value, with seven of the brands coming in at $0.10 or below.

Figure 37 Capsules Competitively Priced On Value

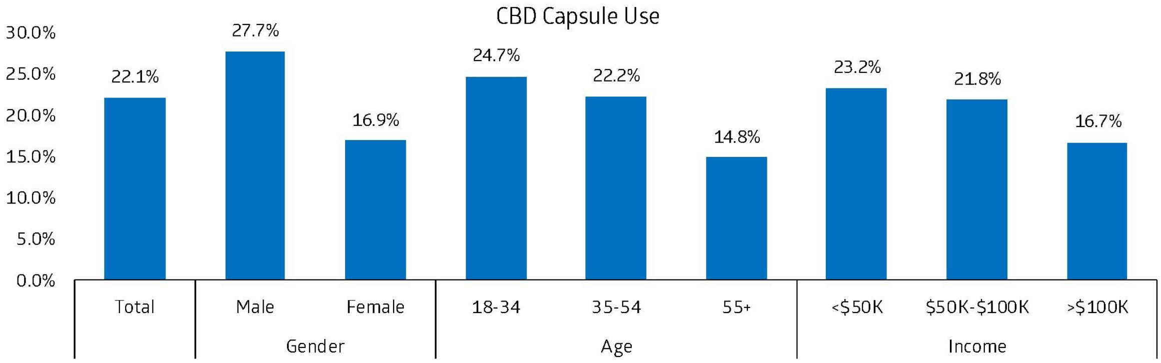


Source: Company Websites and Cowen and Company

Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

Utilizing our proprietary consumer survey, CBD capsule use looks to over-index with males, which shows over a 10 pt delta relative to women. In addition, on a relative basis to other form factors, CBD capsule use is more popular with younger, lower-income consumers, which perhaps explains the notable competition seen within the value segment.

Figure 38 Capsule CBD Use Over-Indexes To Males And Skews Younger And Lower Income



Source: Cowen Survey, N=~2500, January 2019)

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Figure 39 Mary's Capsules Are Priced At A Premium

Mary's
MEDICINALS
CBD
CAPSULES
(30) 5MG CAPSULES
THC
NET WEIGHT: 15g

Source: Company Reports

Figure 40 CWeb is One Of The More Well Known CBD Capsule Providers

CHARLOTTE'S WEB
STANLEY BROTHERS
EXTRA STRENGTH
HEMP EXTRACT CAPSULES
DIETARY SUPPLEMENT
30 CAPSULES

Source: Company Website

Figure 41 Elixinol Offers Differentiated Packaging

450
NATURAL
30 CAPSULES
DIETARY SUPPLEMENT
Elixinol
HEMP EXTRACT
IN MCT COCONUT OIL
900
NATURAL
60 CAPSULES
DIETARY SUPPLEMENT
Elixinol
HEMP EXTRACT
IN MCT COCONUT OIL

Source: Company Reports

Figure 42 Lazarus Competes At The Low-End of Value

Lazarus Naturals
CBD CAPSULES
200 CAPSULES
40 CAPSULES
10 CAPSULES

Source: Company Website

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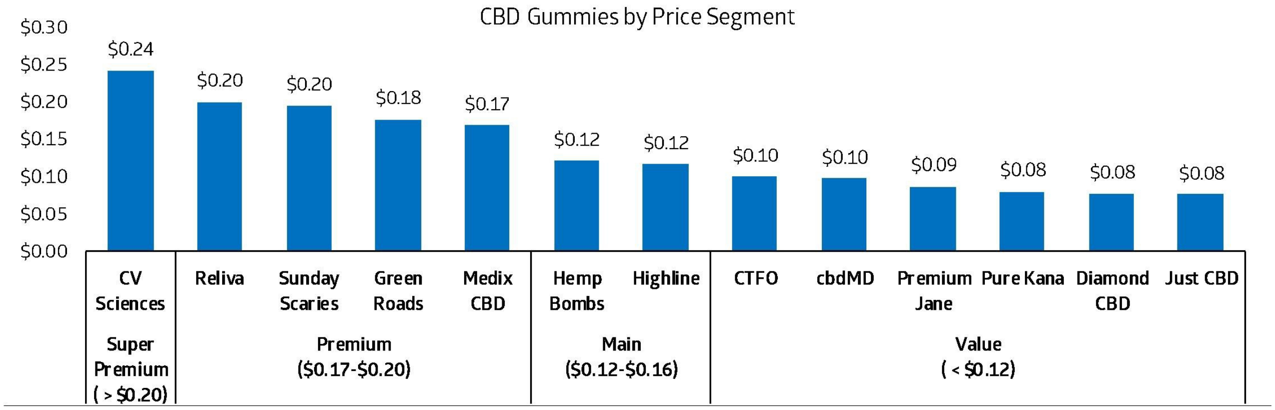
For gummies, we analyzed 30 SKUs across 13 brands. Our analysis shows that CV Sciences' CBD Oil Gummies are the most premium priced at an average $0.24 per mg of CBD. CV Sciences offers two SKUs with their 30 capsule bottle providing 150 mgs of CBD for $39.95, while their second SKU offers a slightly better value proposition, with a 60 count bottle providing 300 mgs of CBD for $64.95 ($0.22 per mg).

Hemp Bombs had the largest number of SKU's relative to the other brands analyzed (7), while also having the highest absolute price point ($139.99 for a 60 gummy bottle with 1,500 mgs of CBD), though the average price per mg of CBD positioned the brand within the main segment.

Similar to its tincture offering, we would note that Highline falls broadly in the middle of its peers, as their direct-to-consumer business model allows the company to offer competitive pricing across its portfolio.

Almost half of the brands analyzed fell into the value segment, all priced at $0.10 per mg of CBD or lower. Across all 30 SKUs, average retail price was ~$50 per offering, with an average 450 mgs of CBD offered per bottle.

Figure 43 Almost Half Of The Brands Analyzed Fall Into The Value Segment



Source: Company Websites and Cowen and Company

Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

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Figure 44 CV Sciences Gummies Are Priced At A Premium

PLUS
+CBDoil
HEMP GUMMIES
Full Spectrum Hemp Extract
SUPPLEMENT | 30 Gummies

Source: Company Website

Figure 45 Green Roads' 300 MG Gummies Retail For $55

GREEN ROADS
RELAX BEARS
CBD DAILY DOSE GUMMIE
300MG
30 GUMMIES PER CONTAINER

Source: Company Website

Figure 46 Highline Is Priced Competitively

Highline
WELLNESS
PREMIUM CBD
CHEWS
30ct • 300mg

Source: Company Website

Figure 47 cbdMD Offers Two 30 Count SKUs (300 mgs and 750 mgs)

30 GUMMIES
cbdMD
PREMIUM CBD
GUMMIES
300MG
10mg / Gummy
MADE IN THE U.S.A.

Source: Company Website

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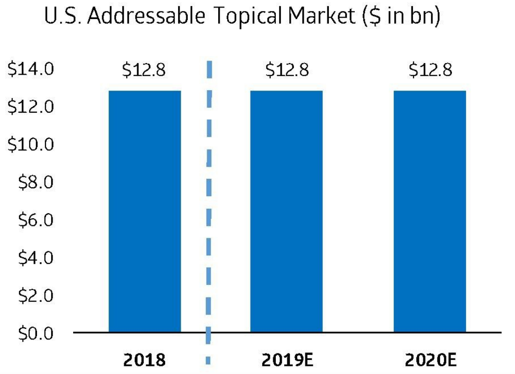
Topicals

Outside of nutraceuticals, we expect the topical CBD market to provide the largest contribution to industry sales. We believe the non-ingestible nature of the product makes it more attractive to consumers looking to experiment in CBD and can provide a source of trial into the category. While the CBD market clearly needs more clinical research into the benefits of the cannabinoid, it has been suggested that two of the primary benefits are anti-inflammation and muscle recovery, which can cater to a large and diverse consumer base.

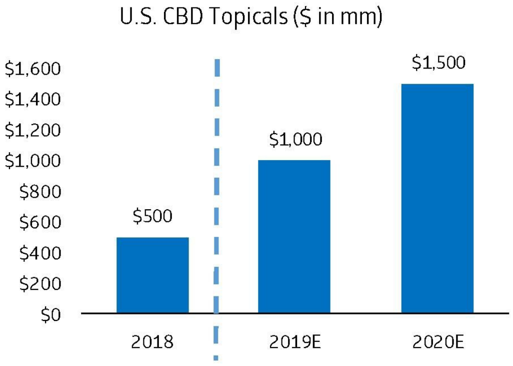
Over the next two years, we expect the topical CBD market to grow to $1.5 bn (almost $1 bn less than our outlook for nutraceuticals). We estimate that in 2018, the total addressable U.S. topical market, which includes both OTC and rx offerings was ~$12.8 bn. If we assume no growth in the category base, a $1.5 bn CBD category by 2020 would imply a ~12% share of the market, the largest market share among all of the categories analyzed, excluding nutraceuticals.

Figure 48 U.S. Topical Category Generates ~$13 BN In Revenue



Source: Company Reports and Cowen and Company

Figure 49 We Believe CBD Topicals Could Be A $1.5 BN Market in 2 Years



Source: Cowen and Company

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Our below scenario analysis provides a wider incremental range of market share outcomes relative to other categories. We can see that every 5 pts of market share capture is worth over $600 mm in revenues. While our analysis contemplates a 2% share of the topical market, we believe that this is unlikely and view the floor at ~7%, which would imply almost $900 mm in revenues by 2020. Given the number of companies providing topical solutions, coupled with what we expect to be robust consumer demand, a market share between 12-17% is not unrealistic.

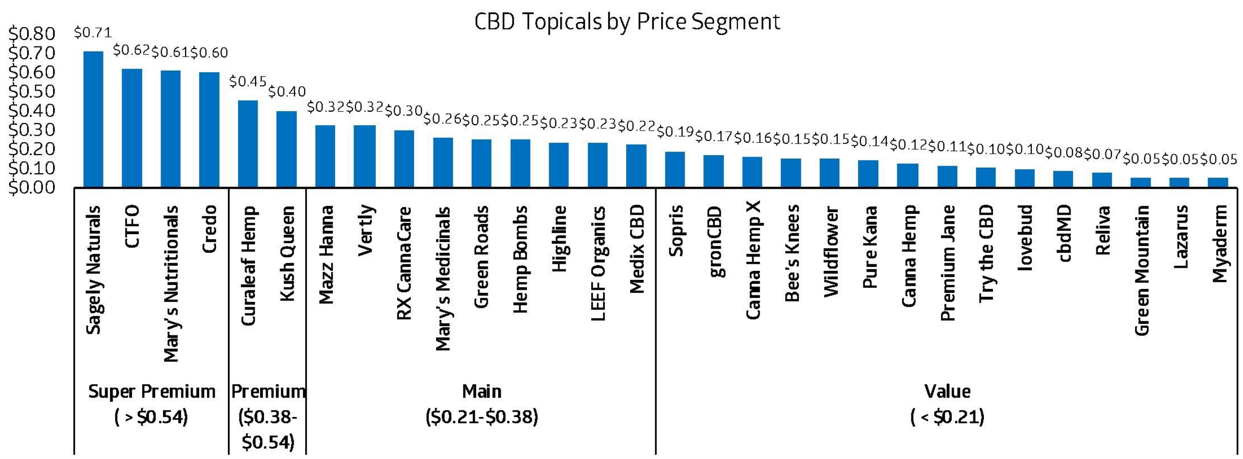
Figure 50 Topicals Expected To Be a Major Contributor to CBD

2020 Market Share Scenario Analysis					
Market Share	2%	7%	12%	17%	22%
Absolute Sales ($ in mm)	$220	$860	$1,500	$2,140	$2,780

Source: Cowen and Company

Benchmarking across the topical market, we would highlight the absolute number of brands offering a product, which while not exhaustive, provides context on the popularity of the form factor. Similar to most other verticals, Mary's topicals fall into the super-premium segment, which we define as anything above $0.54 per mg of CBD. Of all the SKUs analyzed, the premium segment looks to be the narrowest, while mainstream and value segments are the most popular price point among the competitive set.

Figure 51 Popularity in Topicals Are Reflected In The Overall Number Of Brands Playing Within The Segment

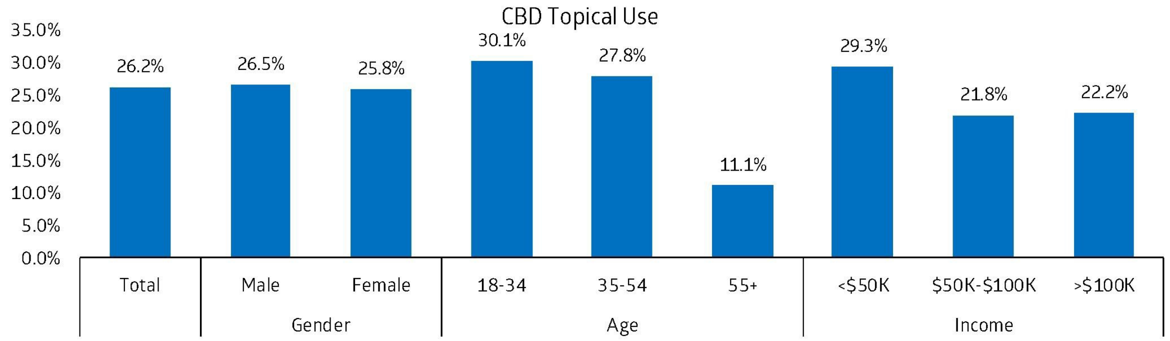


Source: Company Websites and Cowen and Company

Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

According to our proprietary Cowen consumer survey, of respondents who use CBD, 26.2% of people use topicals as a form factor, which is the highest level seen after tinctures. Usage among men and women look to be similar, though younger, lower income use looks to be more prevalent when benchmarking to older, higher income cohorts. Similar to capsules, this could reflect the large number of brands we see playing in the value segment.

Figure 52 Topical Use Is More Prevalent Among Younger, Lower Income Consumers



Source: Cowen Survey, N=~2500, January 2019

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Figure 53 Mary's Provides A Range Of Topicals, Including Muscle Freeze

Mary's
MEDICINALS
MUSCLE
FREEZE
ELITE CBD
COOLING ACTION

Source: Company Report

Figure 54 Curaleaf Hemp Lotion Priced On The Premium Side

curaleaf
HEMP
LOTION
LEMONGRASS
Topical Lotion with CBD | 300mg | NET WT. 4 oz

Source: Company Website

Figure 55 Highline Positioned Within Mainstream

Highline
PREMIUM CBD
CREAM
150mg • 1oz

Source: Company Website

Figure 56 Reliva's Pain Cream Retails For $19.99

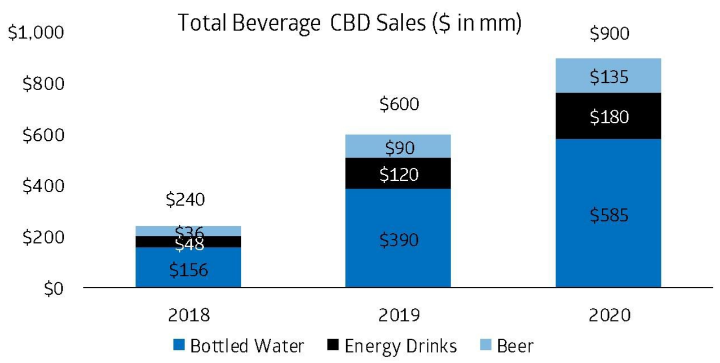
NEW
reliva
CBD WELLNESS
CBD
PAIN CREAM
300 mg
RELIEF
0% THC
2 oz (60 ml)

Source: Company Website

Beverages

Over the next two years, we believe that the beverage category can grow to a $900 mm revenue opportunity. Our conviction in this category is underscored by our proprietary consumer survey, which shows that almost 20% of CBD users consume beverages, which we view as an encouraging sign. For 2019, we are forecasting a notable acceleration in growth, with revenues more than doubling to $600 mm. Assuming growth moderates in 2020 (to 50%), we believe revenues will approach the $1 bn mark.

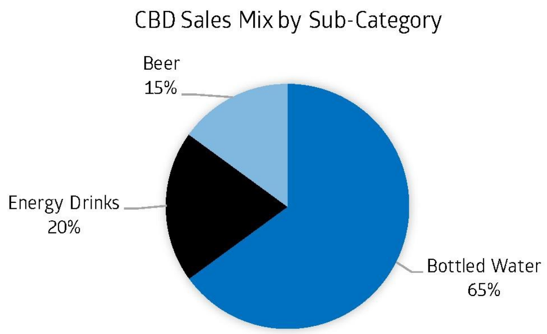
Figure 57 Sales for Beverages Can Approach $1 BN Over the Next Two Years



Source: Cowen and Company

Below we provide a sub-segment build by category, where we believe CBD water will represent the lion's share of sales at 65%. Energy drinks have been focused on health and wellness and we believe that CBD-infused energy drinks will represent a niche segment in a category that continues to see more competition. We expect CBD beer to have a place in the category, though should admittedly be smaller in scale, given less interest from a lack of THC.

Figure 58 CBD Water Should Have An Outsized Contribution On Category Sales



Source: Cowen and Company

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Bottled Water

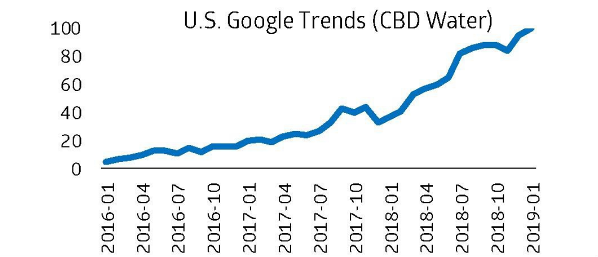
Consumer interest in CBD continues to gain momentum. For beverages, in particular water, this is evidenced by analyzing current Google Trends, where interest rose considerably over the course of 2018 and looks to still be achieving new highs, which is not surprising, given the recent passage of the U.S. Farm Bill.

Figure 59 Bottled Water Should Be The Most Popular CBD Beverage

2020 Market Share Scenario Analysis							
Market Share	0.6%	1.1%	1.6%	2.1%	2.6%	3.1%	3.6%
Absolute Sales ($ in mm)	$159	$301	$443	$585	$727	$869	$1,011

Source: Cowen and Company

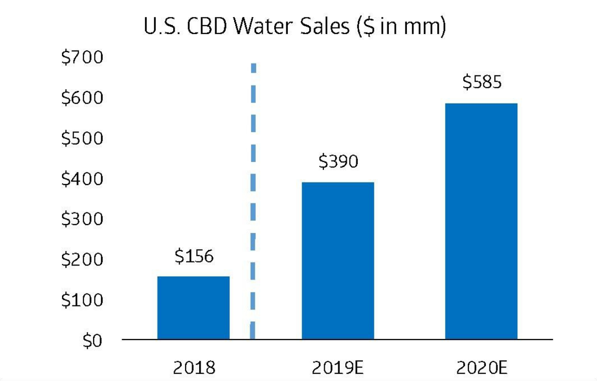
Figure 60 Increasing Interest Reflected In Google Search Trends



Source: Google Trends and Cowen and Company

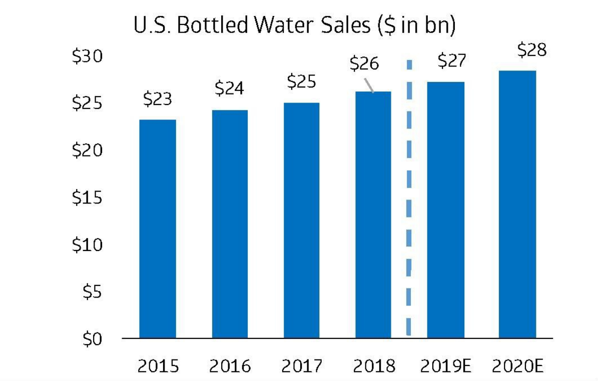
Over the next 2 years we believe that the U.S. CBD water category can generate close to $600 mm in revenues. In Nielsen, U.S. bottled water generated just over $13 bn in 2018. Assuming Nielsen channels account for 50% coverage of the category implies total revenues of over $26 bn. Applying the 4.2% CAGR the category has grown over the last 3 years and extrapolating out results in total revenue surpassing $28 bn by 2020. Our estimates are premised on CBD water achieving a ~1.5% market share in 2019 and a conservative ~2% market share of the U.S. bottled water category in 2020. We would note that a ~2% share of the bottled water category compares to a ~3% share for coconut water. With the amount of consumer interest and potential functional benefits that come along with CBD, we believe that a modest 2% share of the category is reasonable, in particular if multiple larger players within the beverage space enter the category and drive distribution. Above, we provide a scenario analysis on the revenue opportunity assuming different market share levels.

Figure 61 A 2% Share Implies Over $500 MM In Revenues



Source: Cowen and Company

Figure 62 Bottled Water Category Growth Remains Healthy



Source: The Nielsen Company and Cowen and Company
Note: Assumes 50% coverage in Nielsen

Energy Drinks

Energy is another beverage category that we feel is ripe for CBD inclusion, as it continues to expand towards health and wellness propositions. This has been reflected in consistent strong growth from MNST's Ultra line, which offers functional benefits without the sugar, Muscle Monster, which is high in protein, as well as the emergence of Bang, which contains BCAA. At their recent Analyst Day, MNST indicated that they will be launching a new product called Reign, which will offer 5x the amount of BCAA as Bang. As the lines between core energy drinks and health and wellness offerings continue to blur, we would expect all of the major players to come to market with offerings that contain CBD and provide incremental functional benefits (such as muscle recovery).

We believe that by 2020 it is reasonable for CBD's share of the energy category to reach ~1%, which we view as conservative as it is below the current market share run rate that Bang has already been able to achieve. A 1% share would imply revenues of ~$180 mm for the CBD segment, assuming that the category continues to grow at the same 4.3% CAGR it has delivered over the past three years. We can see below that implied category revenues for total energy would grow by over $1 bn over the next two years to ~$17 bn.

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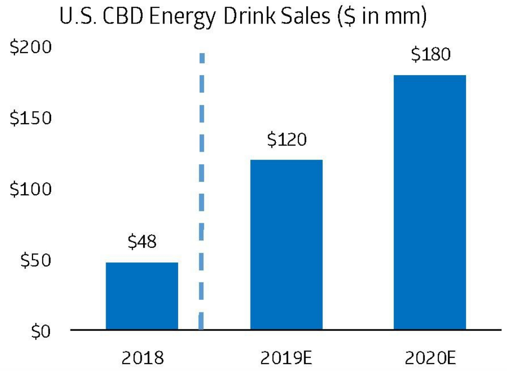
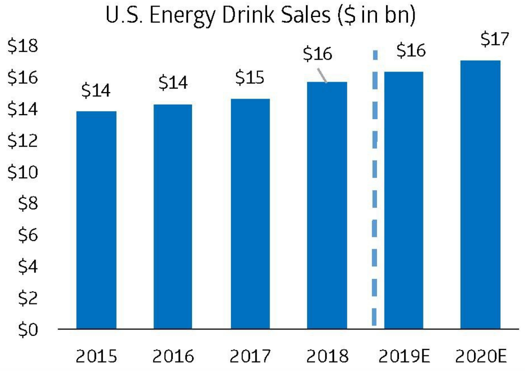
Figure 63 Almost $200 MM In Revenues Assuming 1% Share By 2020



Source: Cowen and Company

Figure 64 Extrapolating 4.3% CAGR Results In Category Revenues Surpassing $17 BN In 2 Years



Source: The Nielsen Company and Cowen and Company
Note: Assumes 75% coverage in Nielsen

Below we provide a scenario analysis on CBD energy revenues associated with market share gains. We would note that a 0.3% share by 2020 would be at the low-end of our expectations and result in revenues of ~$50 mm. As a point of reference, recall that Mutant, which did not perform to expectations and has essentially been de-prioritized by MNST, has a current market share of ~0.2%.

Figure 65 Blurred Lines Between Core Energy And H&W Make CBD Ripe For Entry Into Category

2020 Market Share Scenario Analysis							
Market Share	0.3%	0.6%	0.8%	1.1%	1.3%	1.6%	1.8%
Absolute Sales ($ in mm)	$52	$95	$137	$180	$223	$265	$308

Source: Cowen and Company

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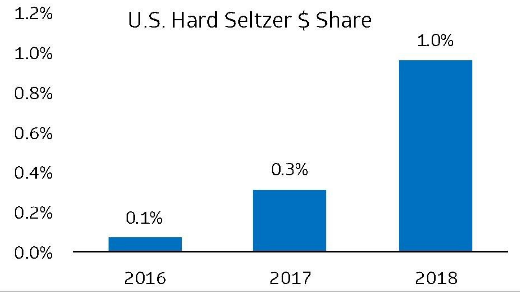
Beer

We believe CBD infused beer can serve as a niche segment in a rapidly evolving beer category. With core beer under pressure, a continued theme from the key manufacturers within the space has been a focus on innovation, as well as a move away from alcohol into low and no-alcohol offerings (ABI is targeting 20% of portfolio to be low / no alcohol by 2025).

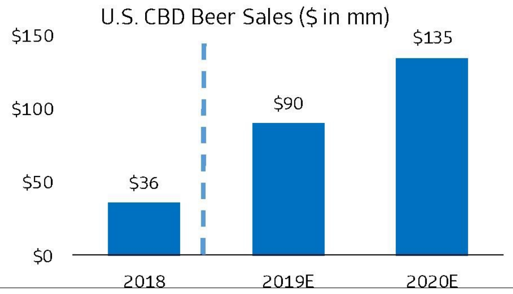
On the innovation front, hard seltzer looks to be resonating with consumers, which we believe is sticky, as it offers consumers a new product and opportunity to drive incremental drinking occasions, while checking the box from a health and wellness standpoint. In 2018, the hard seltzer category achieved a 1% market share of the combined beer category, which includes, core beer, cider and FMBs. If we assume that CBD-infused beer is able to capture a modest fifth of that amount of share by 2020 (~20 bps), that could result in a revenue opportunity of over $130 mm. We have been hearing growing interest in companies looking to combine CBD in alcoholic beer to offer potential hangover relief.

Figure 66 Hard Seltzer Achieved A 1% Dollar Share In 2018



Source: The Nielsen Company and Cowen and Company

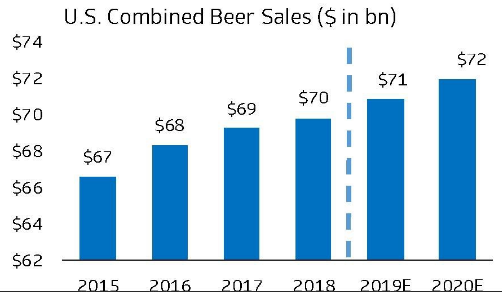
Figure 67 Assuming ~20 Bps Of Share For CBD Beer = $135 MM



Source: Cowen and Company

These estimates are benchmarked to a category that has grown sales at a 1.6% CAGR over the past three years. If we assume Nielsen provides 50% coverage of the total category and extrapolate that growth out, total off-premise revenues should approach $72 bn by 2020. We provide a sensitivity analysis below on the 2020 revenue opportunity based on different levels of market share capture. We estimate every 5 bps of share is worth $36 mm.

Figure 68 1.6% Growth Should Result In Category Revs Of ~$72 BN



Source: The Nielsen Company and Cowen and Company
Note: Assumes 50% coverage in Nielsen; off-premise sales only

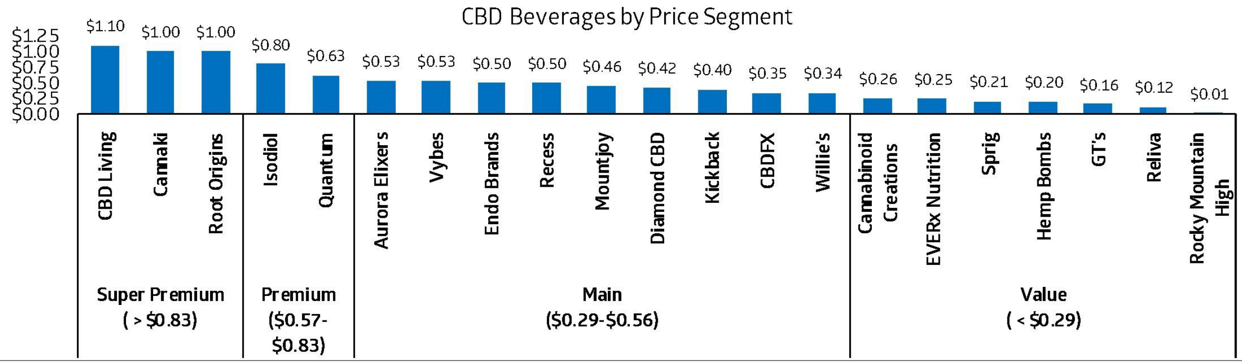
Figure 69 Each 5 bps Of Share Is Worth $36 MM In Revenue

2020 Market Share Scenario Analysis					
Market Share	0.09%	0.14%	0.19%	0.24%	0.29%
Absolute Sales ($ in mm)	$63	$99	$135	$171	$207

Source: Cowen and Company

There are a solid amount of beverage companies currently playing within the space, largely price positioned within the mainstream and value segments of the market. We would highlight that on a price per mg basis, beverages skew higher across the board, relative to tinctures, capsules and gummies.

Figure 70 Beverage Price Points Are Premium Relative To Tinctures, Capsules, Gummies, And Topicals

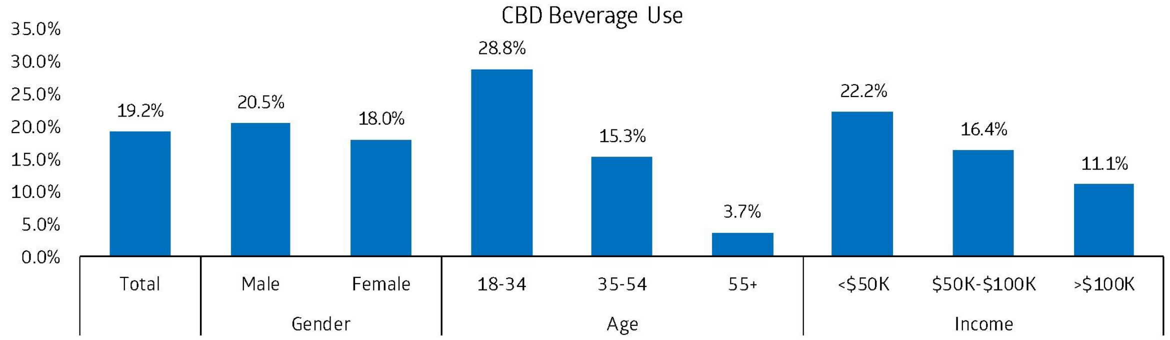


Source: Company Websites and Cowen and Company

Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

Based on our survey, of respondents that use CBD, 19.2% use beverages as a form factor, which is admittedly higher than we would've expected given the nascent stage of the category. Similar to both capsules and topicals, beverage use is a more popular choice among younger, lower income consumers (by a wider margin relative to other age cohorts compared to the other categories). This leaves us optimistic on the future prospects of the category as a waterfall effect can result in an increase in category mix.

Figure 71 Popularity Among Younger Consumers Can Result In A Waterfall Effect Over Time



Source: Cowen Survey, n=~2500, January 2019

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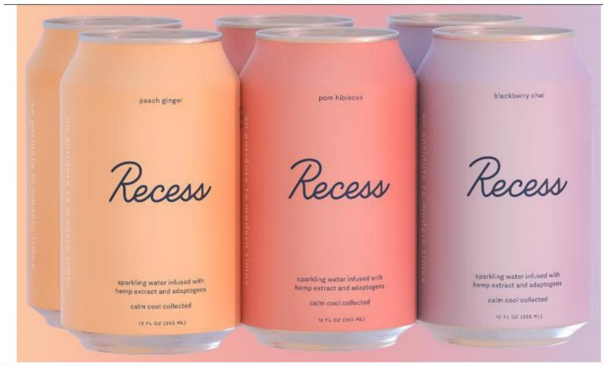
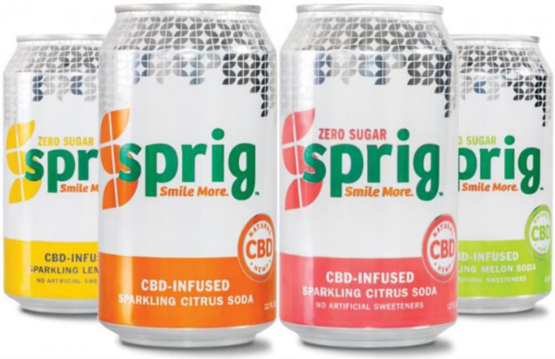
Figure 72 Recess Offers Impressive Packaging


peach ginger
pom hibiscus
blackberry chai
Recess
sparkling water infused with hemp extract and adaptogens
calm cool collected

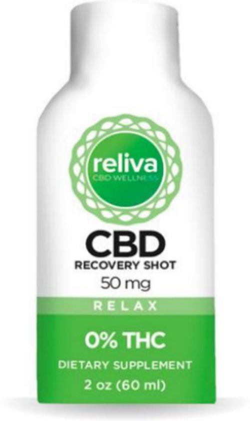
Source: Company Reports

Figure 73 Sprig Offers A Variety Of Flavor Options


ZERO SUGAR
sprig
Smile More.
CBD
CBD-INFUSED
SPARKLING CITRUS SODA
NO ARTIFICIAL SWEETENERS

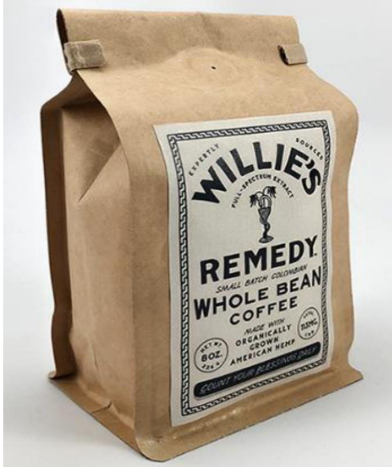
Source: Company Website

Figure 74 Shots May Overlap with Energy Over Time


reliva
CBD WELLNESS
CBD
RECOVERY SHOT
50 mg
RELAX
0% THC
DIETARY SUPPLEMENT
2 oz (60 ml)

Source: Company Website

Figure 75 Willie's Recently Came to Market with a Coffee


WILLIE'S
REMEDY
SMALL BATCH COLOMBIAN
WHOLE BEAN COFFEE
MADE WITH ORGANICALLY GROWN AMERICAN HEMP
8OZ
COUNT YOUR BLESSINGS DAILY

Source: Company Website

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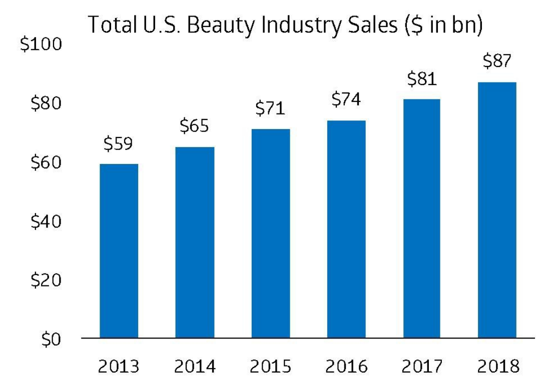
Beauty

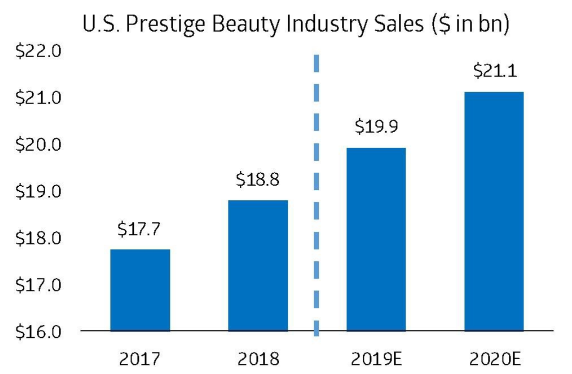
The U.S. beauty category, which is inclusive of skin care, cosmetics, haircare, fragrance, bath & body, salon styling tools, and other toiletries, is a ~$87 bn industry according to Euromonitor International and IBIS World Inc. Within mass beauty, the prestige segment grew 6%, accounting for almost $19 bn in revenue in 2018 according to NPD. If we extrapolate the 6% growth in prestige beauty out through 2020, that would result in segment revenues surpassing $21 bn over the next two years.

Figure 76 Total U.S. Beauty Is A ~$87 BN Industry



Source: Company Reports and Cowen and Company

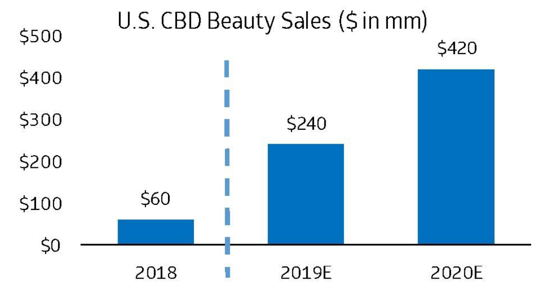
Figure 77 Prestige Can Grow To Over $21 BN By 2020



Source: NPD and Cowen and Company

We expect that CBD beauty will become more of a focus for consumers, as large-scale manufacturers and retailers begin to roll out more products, which will presumably generate positive mix and result in a step-change in market share capture. As such, we believe that a ~1% share of the prestige market is achievable in 2019, doubling to 2% in 2020, which would equate to over $400 mm in sales. The below analysis provides a scenario of revenue outcomes based on share capture, ranging from ~$200 mm to over $600 mm.

Figure 78 CBD Beauty Sales Can Surpass $400 MM By 2020



Source: Cowen and Company

Figure 79 Each 50 bps Of Share Is Worth Over $100 MM In Revenue

2020 Market Share Scenario Analysis					
Market Share	1.0%	1.5%	2.0%	2.5%	3.0%
Absolute Sales ($ in mm)	$209	$314	$420	$526	$631

Source: Cowen and Company

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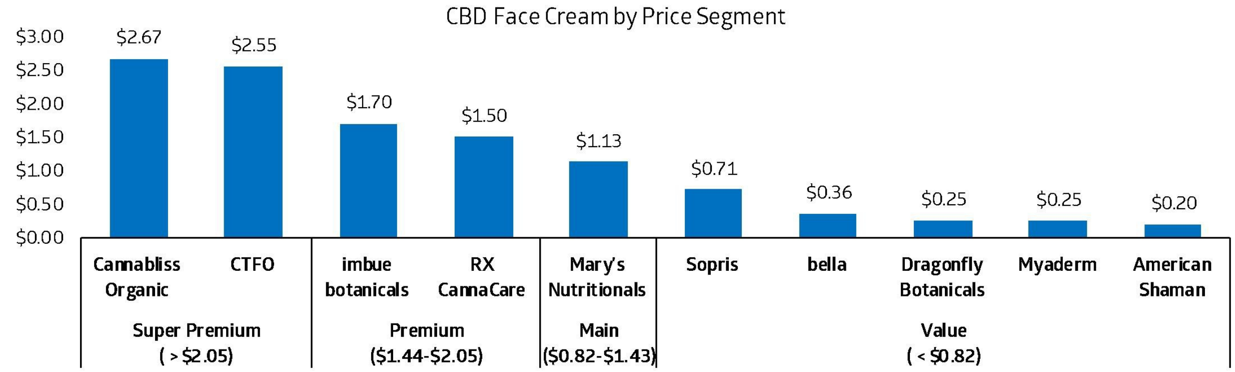
Beauty products, and face treatments in particular, command price points notably above other form factors across the space, which will presumably offer by far the highest gross margins. Among high-end face creams, Cannabliss Organic and CTFO provide 30 mgs and 20 mgs of CBD respectively, while commanding price points ranging from $50-$80.

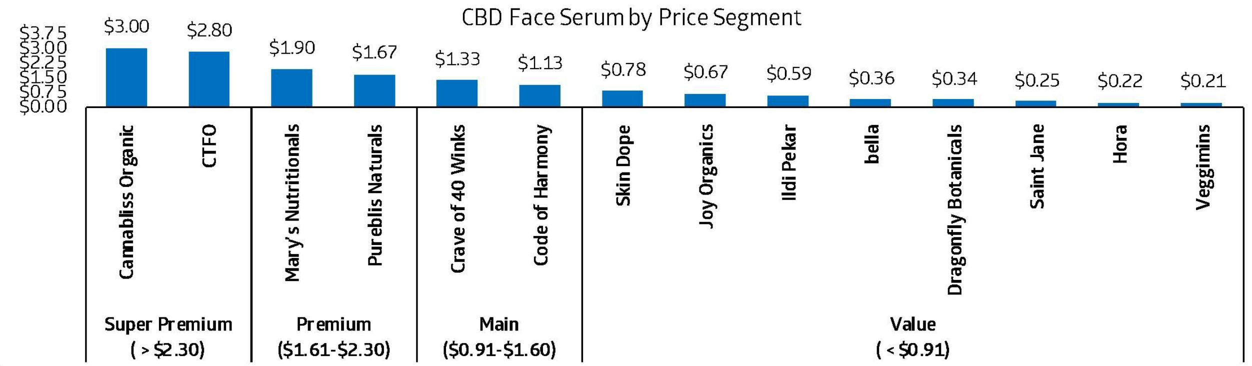
Figure 80 Beauty Facial Products Command Meaningfully Higher Price Points



Source: Company Websites and Cowen and Company
Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

Face serums look to be even more expensive across all segments, with price points from mainstream through super-premium ranging from over $1 to $3 per mg of CBD.

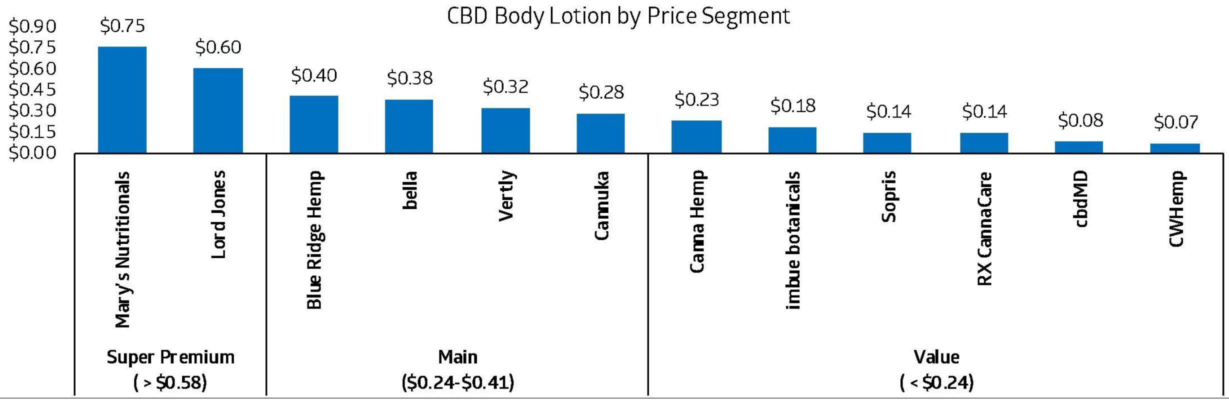
Figure 81 Face Serums Are The Most Expensive On A Price/MG Basis



Source: Company Websites and Cowen and Company
Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

Body lotions offer more value per mg of CBD, relative to facial beauty products, with Mary's and Lord Jones positioned at the high-end of the competitive set. To segment from the broad topicals market, we would note that we classified beauty creams as products offering soothing and moisturizing characteristics (as opposed to targeted pain relief).

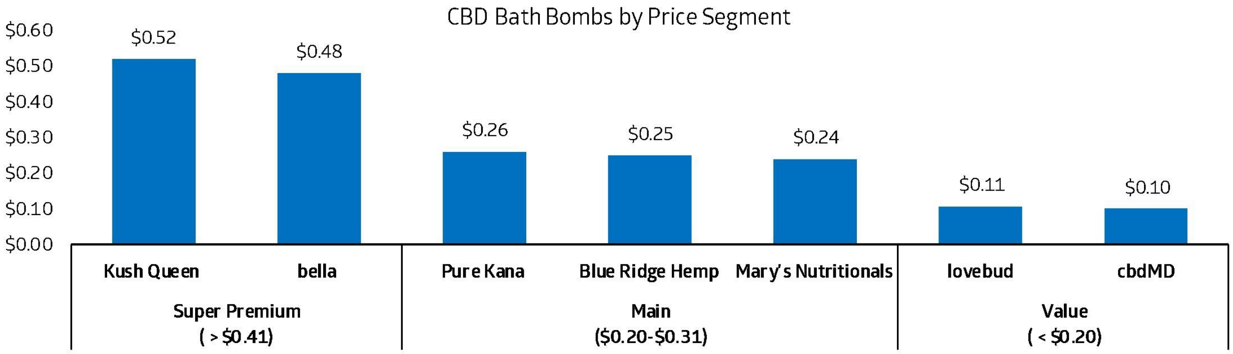
Figure 82 Body Lotions More Moderately Priced Relative To Facial Beauty Products



Source: Company Websites and Cowen and Company
Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

Bath products are not surprisingly the most reasonably priced within beauty. We would note that cosmetics are still a niche category within CBD, which is reflected in the lower number of products and SKUs currently offered. That said, we believe the multiple sub-categories offering CBD products will appeal to a broad range of consumer demographics.

Figure 83 Bath Bombs Are A Niche Segment



Source: Company Websites and Cowen and Company
Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

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Figure 84 Mary's Offers Multiple Beauty Products

Mary's METHODS
Balance
Hydrating Hyaluronic Acid Serum
Restore
Nourishing Body Serum
Polish
Dead Sea Salt Body Scrub
Purify
Renew

Source: Company Reports

Figure 85 Through its Recently Announced JV With Dixie Brands, Khiron Will Eventually Roll Out Its Kuida Line In The U.S.

KHIRON
KUIDA
SPRAY RELAJANTE CORPORAL
BODY MIST RELAX
CANNABIS COSMETICS
EXFOLIANTE FACIAL Y CORPORAL
FACIAL AND BODY SCRUB
CANNABIS COSMETICS
CREMA CORPORAL
BODY LOTION
CANNABIS COSMETICS
CREMA NOCHE REGENERADORA
REGENERATIVE NIGHT CREAM
CANNABIS COSMETICS

Source: Company Website

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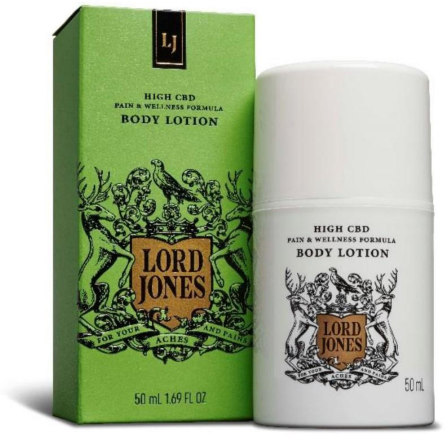
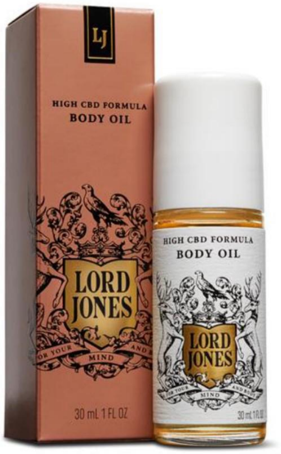
Figure 86 Lord Jones Packaging Reflects Premium Nature Of The Brand



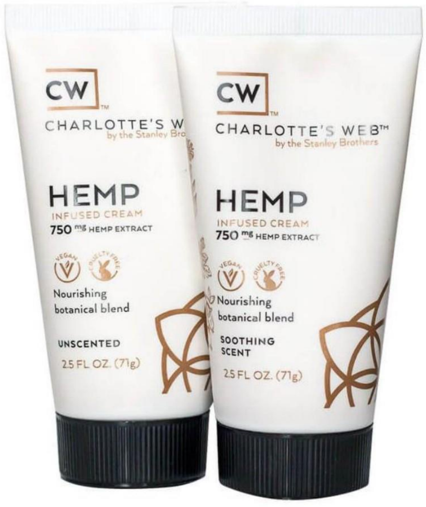
Source: Company Reports

Figure 87 In Addition To A Lotion, They Also Offer A Body Oil



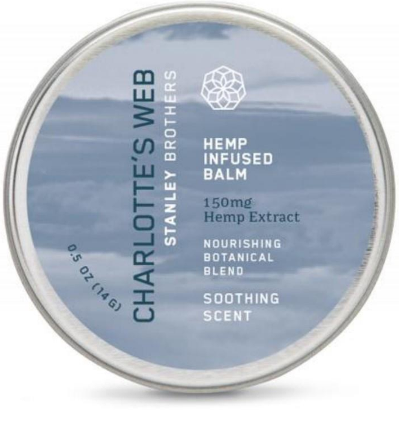
Source: Company Reports

Figure 88 CWEB Offers Creams…



Source: Company Website

Figure 89 …And Balms



Source: Company Website

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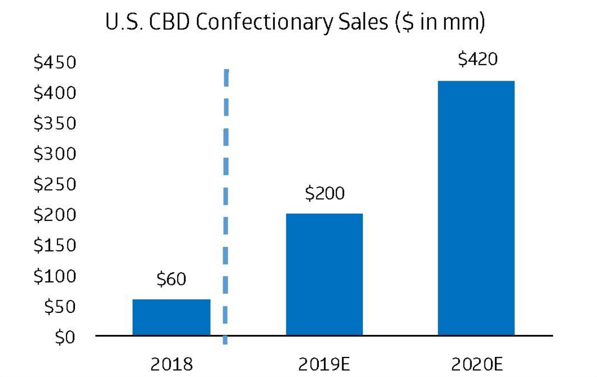
Food (Confections)

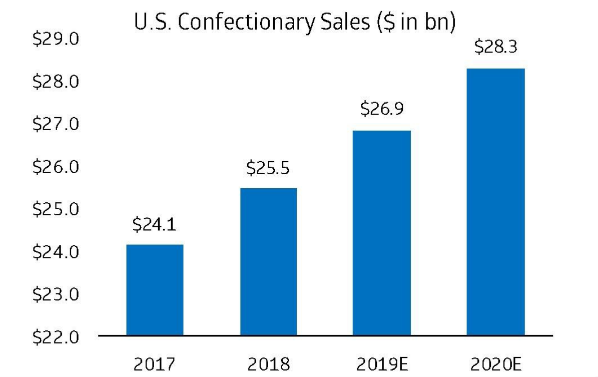
The food category, which we classify as confections, including gum drops, chocolates, baked goods, and bars, is expected to be one of the smaller revenue opportunities relative to nutraceuticals, topicals and beverages. That said by 2020, we believe the sales can surpass $400 mm, should the category increase its share of overall CBD to 7% by 2020. In the U.S., we estimate that the confection category (chocolate, non-chocolate and gum) grew to $25.5 bn in 2018, reflecting a 5.5% YoY growth rate. If we extrapolate that growth out over the next 2 years, the total implied confection market would surpass $28 bn. A $420 mm CBD food category would reflect just a 1.5% share of the total confectionary industry.

Figure 90 Confectionary CBD Sales Can Surpass 400 MM By 2020



Source: Cowen and Company

Figure 91 Extrapolating 5.5% Growth Results In Category Revenues Surpassing $28 BN In 2 Years



Source: IRI and Cowen and Company

Note: 2018 sales reflect latest 52 weeks ended 3/25/18

The below sensitivity contemplates the overall revenue opportunity based on CBD confections share of the overall category. While we believe a 1.5% share is reasonable and achievable, the revenue outcomes range from ~$100 mm to $700 mm based on the level of market share gains achieved over the next two years.

Figure 92 We Believe Sales Can Range From Over $100 MM To ~$700 MM Based On Level Of Share Capture

2020 Market Share Scenario Analysis					
Market Share	0.5%	1.0%	1.5%	2.0%	2.5%
Absolute Sales ($ in mm)	$137	$278	$420	$562	$703

Source: Cowen and Company

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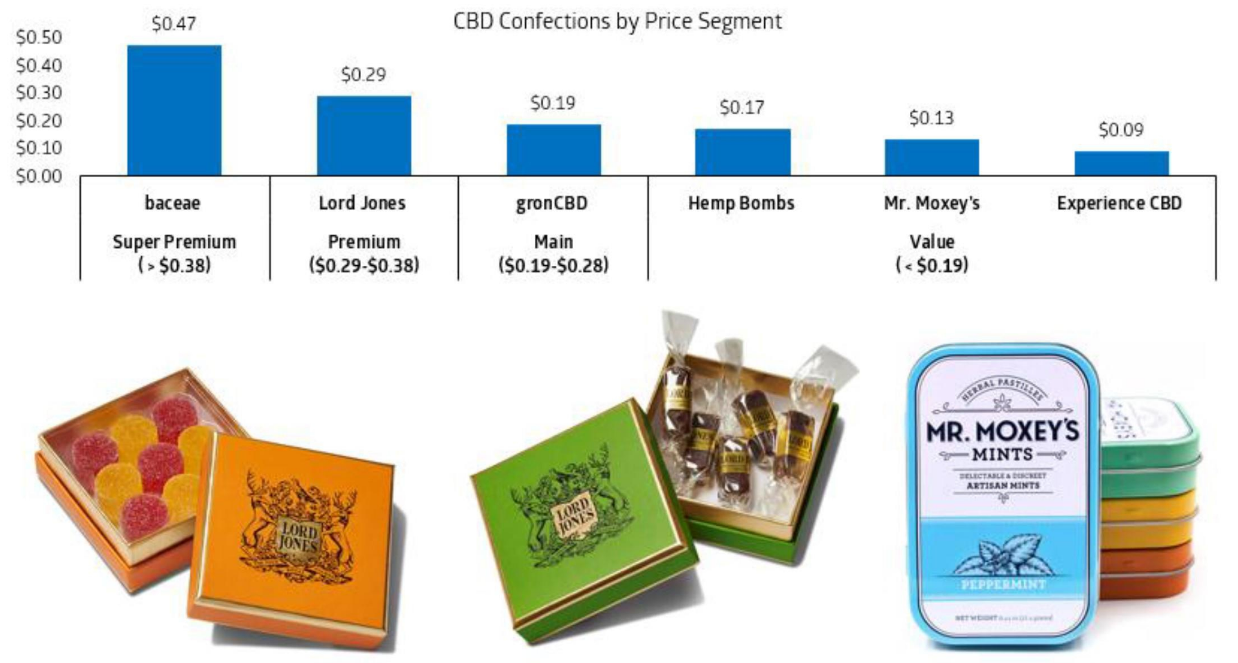
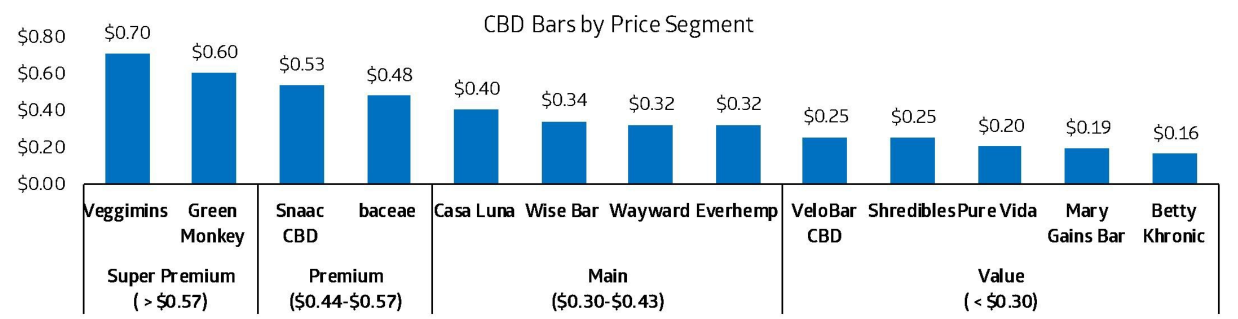
Confection products are diverse, which we classify as essentially any edible food falling outside of gummy vitamins. Of the brands analyzed, super-premium brand, beceae offered by far the most SKUs (15), which largely consist of chocolates and other baked goods. We would caveat that although Lord Jones products fall into the premium segment as part of this analysis, if we were to benchmark them against the broad gummies category, they would've been at the top of the super-premium range.

Figure 93 Confections Are Broad Based



Source: Company Websites/Reports and Cowen and Company
Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

Figure 94 CBD Bars Broadly Comprised Of Protein, Power, Energy And Granola Offerings



Source: Company Websites and Cowen and Company
Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

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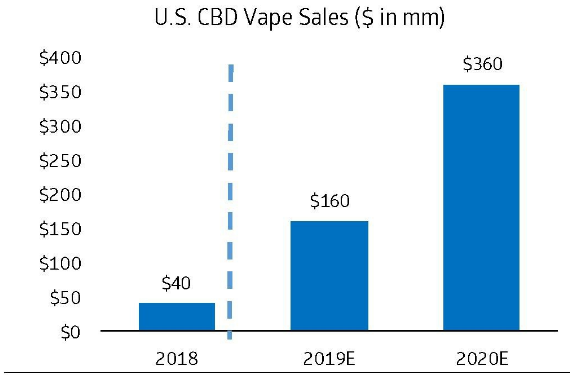
Vapor

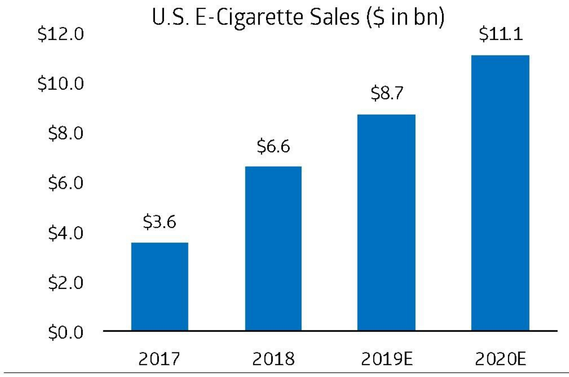
While vapor remains the major market share gainer across adult use cannabis, CBD only offerings are much smaller, but represent a solid growth segment. Over the next two years, we believe the category can generate over $350 mm in revenues, with upside if consumer adoption of this particular form factor resembles the adult use market for THC, or the growing popularity of nicotine vapor. We benchmark the market opportunity against the U.S. e-cigarette category, which we are forecasting to grow ~32% in 2019 and ~27% in 2020, resulting in revenues surpassing $11 bn in 2020. In addition to e-commerce, we believe there will be distribution channel overlap with e-cigs, with a focus on vape shops and convenience stores (as opposed to just dispensaries). If vapor generates $360 mm in revenues in 2020, that would result in an implied market share of 3.2%, roughly 10% of JUUL's current U.S. market share.

Figure 95 Vapor Will Be Smaller, But Can Grow To Almost $400 MM



Source: Cowen and Company

Figure 96 Our E-Cig Model Assumes Revenues Of ~$11 BN By 2020



Source: Cowen and Company

The below scenario analysis shows that every 50 bps of market share capture is worth ~$56 mm in revenues. While we are forecasting CBD vape to be ~3% of the market, we believe there is upside to these numbers and that strong consumer adoption can result in revenues surpassing $500 mm.

Figure 97 $360 MM In Revenue Implies A ~3% Share Of The Category

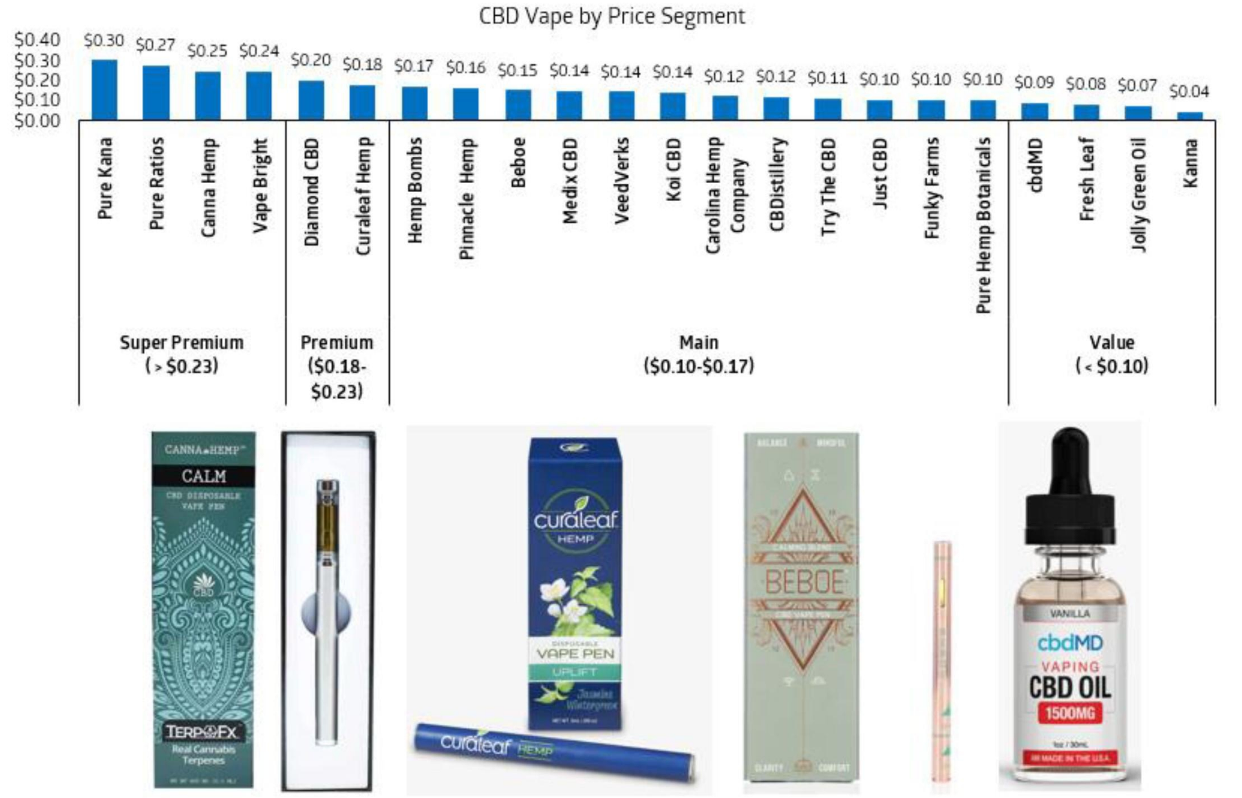
2020 Market Share Scenario Analysis							
Market Share	1.7%	2.2%	2.7%	3.2%	3.7%	4.2%	4.7%
Absolute Sales ($ in mm)	$193	$249	$304	$360	$416	$471	$527

Source: Cowen and Company

The below figure reflects the notable competition seen within vape as more companies continue to enter the space. In addition to CBD only-focused companies, we are starting to see crossover from adult-use / medical focused companies including Green Thumb Industries and Curaleaf Hemp. Indeed, GTI recently announced the acquisition of Beboe, which will offer a CBD vape pen with a focus on gaining distribution in high-end retail stores. Curaleaf will offer their pen through its e-commerce platform and dispensaries.

Notably, crossover does not pertain solely to cannabis companies, as Turning Point Brands recently announced a minority stake in CASH, a privately held CBD extraction and production company. With a rapidly growing vapor infrastructure in place already (from Vapor Beast, Vapor Shark and Vapor Supply), TPB has a number of avenues and distribution points, both B2B and B2C, to introduce CBD vapor products to complement its portfolio. As such, we look for new CBD product introductions from TPB over the next year, with vapor as a logical entry point and key focus area.

Figure 98 Competition Expected to Heat Up Across Vapor



Source: Company Websites and Cowen and Company

Note: Reflects price per mg of CBD; For companies with multiple SKUs, we used a straight line average

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The below chart provides a condensed visual snapshot on company pricing in the preceding category discussions. We would highlight the broad number of categories that multiple emerging private companies are actively competing in, which is expected to increase as the category continues to gain momentum.

Below we provide company descriptions on some of the more notable public and private companies currently competing within the space.

Figure 99 Condensed Pricing Heat Matrix By Company And Category

CBD Price/MG Summary Matrix

	Tinctures	Capsules	Gummies	Confections	Balm	Bath Bombs	Topicals	Vape	Beverages
baceae	$0.17			$0.47					
Beboe								$0.15	
Canna Hemp	$0.08	$0.10			$0.33		$0.12	$0.25	
Casa Luna									
cbdMD	$0.08	$0.07	$0.10			$0.10	$0.08	$0.09	
Charlotte's Web	$0.08								
CV Sciences	$0.16	$0.12	$0.24		$0.62				
Diamond CBD	$0.22		$0.08					$0.20	$0.42
Elixinol	$0.11	$0.09			$0.24				
Green Roads	$0.20	$0.12	$0.18				$0.25		
Hemp Bombs	$0.11	$0.14	$0.12	$0.17			$0.25	$0.17	$0.20
Highline							$0.23		
Lazarus	$0.04	$0.05			$0.05		$0.05		
Lord Jones	$0.24	$0.11		$0.29					
Mary's Medicinals	$0.16	$0.60			$0.50	$0.24	$0.26		
Mr. Moxey's				$0.13					
Papa & Barkley	$0.13								
Premium Jane	$0.17	$0.12	$0.09				$0.11		
Pure Kana	$0.16	$0.12	$0.08			$0.26	$0.14	$0.30	
Recess									$0.50
Reliva	$0.08		$0.20				$0.07		$0.12
Sprig									$0.21
Sunday Scaries	$0.15		$0.20						
Veggimins	$0.11								
Willie's									$0.34

Note: Blue highlight denotes higher price point, gray denotes lower price point. Balms and Bath Bombs for Mary's Medicinals represent Mary's Nutritionals.
Source: Company Websites and Cowen and Company

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The CBD Competitive Landscape – Public/Private Company Discussions (Azer)

Publicly Traded Companies

1933 Industries. Publicly-traded 1933 Industries (CSE: TGIF; OTCQX: TGIFF) is a vertically integrated cannabis company with operations in both the U.S and Canada. 1933 operates through three subsidiary companies which includes Alternative Medicine Association (AMA), Infused MFG and Spire Global Strategy. AMA (91% ownership), is a licensed medical and adult use cannabis cultivation facility. Infused MFG (91% ownership) produces hemp-based CBD products and Spire Global Strategy (100% Ownership) is an advisory firm offering due diligence, security and intelligence services. The company was an early competitor having launched its first CBD brand in June 2017. The two main brands are Canna Hemp and Canna Fuze, which are distributed across 600 retail locations across the U.S. (largely focused on dispensaries), with 15% of sales coming from e-commerce. In 2018, 1933 delivered ~$12.6 mm in overall revenues, with a gross margin of 49%. Infused MFG specifically contributed 34% to revenues (~$4.3 mm), while achieving a gross margin of 71%.

Canopy Growth (Outperform, C$82 PT). Canopy Growth is a leader in global cannabis, with exposure to over a dozen countries spanning five continents. As the market share leader in the nascent adult use market in Canada, WEED generated sales of $83 mm in its most recent quarter. In addition, WEED was the first Canadian licensed producer to partner with a major consumer packaged goods company. In October 2017, they announced the initial relationship with Constellation Brands, which was meaningfully expanded with a $4 bn investment announced in August 2018. The company has announced its intention to invest $100-$150 mm in New York State (where STZ is headquartered), to construct a hemp industrial park focused on extraction and product manufacturing. More recently, management has noted a willingness to invest as much as $500 mm against U.S. CBD with the expectation that this infrastructure could ultimately be converted to capitalize on a U.S. adult use opportunity, when it materializes.

Charlotte's Web. Founded in 2013 and based in Boulder Colorado, Charlotte's Web is a publicly-traded, market leader within hemp-derived CBD (CSE: CWEB; OTCQX: CWBHF). The company has a vertically integrated business model, consisting of cultivation, manufacturing and distribution. Charlotte's Web products are sold in 3,680 retail locations, with an expanding channel footprint that includes national grocery, drug, mass market, pet, and natural / specialty retailers. Despite being well distributed, 55% of 9M18 revenue has been derived from the company's direct to consumer e-commerce model. Going forward, Charlotte's Web will continue to drive innovation and will look to improve their liquid delivery system to enhance efficacy, convenience and frequency of use. What is more, they will offer botanical blends to target consumer need states (sleep and cognitive function), upgrade bioavailability technology and focus on additional isolated cannabinoid products. To drive sustained growth, the company will look to build brand awareness through media events and social platforms, among others and introduce new, differentiated botanical products in the form of tinctures, capsules, powders, sports performance, topicals, cosmetics, beverages and pet products. Charlotte's Web will selectively pursue M&A to complement their current strengths and will also look to expand internationally, with a near term focus on the EU, South America and Asia. Through FY 9M18, Charlotte's Web has delivered revenues of $48 mm (+75%), with a gross margin of 77%.

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Curaleaf Hemp. Curaleaf (CSE: CURA; OTC: CURLF) is a vertically integrated U.S. multi-state operator (MSO), based in Massachusetts that focuses on selling Curaleaf branded products in its company-owned dispensaries. In September, the company launched a separate CBD focused line called Curaleaf Hemp, which is currently sold in 47 states. Form factors currently offered include tinctures, capsules, topicals, patches, vape pens, and pet treats. With both ingestible and topical CBD products currently offered in select Wegman's stores, Curaleaf Hemp is focused on expanding into more channels and becoming a national CBD brand by the end of the year. Curaleaf Hemp products are mid-tier priced, coming in above value offerings, but below what would be considered super-premium. This allows them to competitively target pharmacy chains and grocery stores. Curaleaf believes women represent an outsized opportunity within CBD and will focus their efforts on positioning their products towards that specific cohort. This makes good sense to us as our proprietary survey indicated that women slightly over-index to CBD relative to men. Through FY9M18, Curaleaf has generated ~$45 mm in revenues (including adult use and medical) reflecting a 247% YoY growth rate, while delivering a gross margin of 57%.

CV Sciences. Headquartered in San Diego, CA, publicly traded CV Sciences (OTCQB: CVSI) has two distinct operating divisions, consisting of consumer products and specialty pharmaceuticals. Within consumer products, the company is engaged in the development, manufacturing, marketing, and distribution of hemp-derived CBD products, which are refined into its own *PlusCBD Oil™* brand. Form factors are broad based and include oils, capsules, sprays, balms, beauty products, and gummies, and are distributed nationally in health food stores and health care provider offices through select distributors and online. CV Sciences currently distributed to over 2,000 retail locations. CV Sciences has generated ~$34 mm in revenues though the first nine months of FY18, which reflects a 153% YoY growth rate. Over the comparable timeframe, the company reported gross margin of 72%, reflecting over 300 bps of expansion.

Elixnol. Elixinol (ASX: EXL; OTCQX: ELLXF) has a global presence in the cannabis industry, including hemp-derived CBD dietary supplements, food and wellness products, as well as the cultivation and manufacturing of medicinal cannabis products. Business segments include:

- **Elixinol USA.** Founded in 2014, Elixinol USA is a manufacturer and global distributor of industrial hemp-based dietary supplements and skincare products, with operations based out of Colorado.
- **Hemp Foods Australia.** Founded in 1999, is a leading hemp foods wholesaler, retailer, manufacturer and exporter of bulk ad branded raw materials and finished products.
- **Elixinol Australia.** Founded in 2014, to participate in the emerging Australian medical cannabis market.

In 2018, Elixinol revenues grew 121% YoY to ~$AUD 37mm (~$27 mm). The company's North America business contributes over 80% to total company revenues.

Green Thumb Industries (Beboe). As one of the more well-known U.S. multi-state operators (MSOs), Green Thumb Industries (CSE: GTII; OTCQX: GTBIF) recently announced the acquisition of Beboe, a premium cannabis brand, headquartered in California. Beboe products are sold in over 125 California and Colorado retail locations, and notably, the acquisition will give GTI access to the CBD market through Beboe's recently launched, direct-to-consumer line of hemp derived CBD products. Current CBD products offered from Beboe include a vape pen, called Calming, which contains 500 mgs cannabis oil, as well as a beverage called Dirty Lemon. In order to maintain the premium nature of the Beboe brand equity, GTI plans to ship the product into high-end luxury stores (which currently includes Barney's). In the first nine months of fiscal 2018,

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GTI has reported revenues of ~$41.7 mm (which includes adult use and medical), reflecting a YoY growth rate of over 300% and gross margin of 45%. We would note that on a pro-forma basis including the acquisition of Essence, in the most recent quarter, GTI would have generated revenues of over $35 mm (vs. $17.1 mm reported).

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Khiron Life Sciences Corp. Khiron is a publicly-traded (TSXV: KHRN; OTCQB: KHRNF), vertically integrated cannabis company currently focused on Latin America. Priority markets in the region include Colombia, Peru, Chile, Brazil, and Mexico. Earlier this year, they announced a 50/50 JV with U.S.-based Dixie Brands, which will result in the introduction of a full line of cannabis infused products to the Latin American market. Importantly, as part of the agreement, Dixie will manufacture and distribute Khiron's Kuida brand of CBD-based cosmetics in the U.S., where they will target the growing Hispanic population. Khiron will operate the JV from Bogota, Colombia, with a focus on regulation, cultivation, manufacturing, and distribution. Dixie will contribute IP, including its extensive brand portfolio, which includes over 100 SKUs spanning 15 different categories. Khiron recently recognized first sales in October 2018.

Level Brands. Originally founded as a consumer products company in 2015, Level Brands (NYSE American: LEVB) subsequently expanded into licensing and brand management prior to initiating an IPO in 2017. Most recently in 2018, the company completed the acquisition of cbdMD, a CBD consumer products brand with products available online and in over 1,000 retail outlets across the U.S. cbdMD offers 60 skus, 24 of which come in the form of oils, while 12 SKUs come in the form of topicals. Additionally, other cbdMD form factors offered include capsules, gummies, bath bombs, and pet products. In its first year, cbdMD delivered $7.5 mm in sales, while achieving a gross margin in excess of 70%. From a route to market perspective, 80% of revenues come from e-commerce, though the company started to build out a sales team to drive brick and mortar penetration.

Tilray (Outperform, $150 PT). Canadian-based Tilray (NASD: TLRY), is a licensed producer and distributor of cannabis across Canada, as well as internationally. Through the company's strategic partnership with Privateer, TLRY licenses established U.S. based cannabis brands including Marley Natural, Irisa, Goodship, Grail, and Dutchy. TLRY has been active on the M&A front, with previously announced acquisitions / partnerships with Novartis, Authentic Brands and AB-Inbev, among others. Most recently, the company announced a C$419 mm acquisition of Manitoba Harvest, the global leader in hemp-derived food products. The cash and stock deal gives TLRY access to Manitoba Harvest's broad range of food products that are currently distributed in 16,000 stores across North America.

Turning Point Brands (Outperform, $45 PT). Based in Louisville, KY, Turning Point Brands (NYSE: TPB) operates in the Other Tobacco Products (OTP) category and sells and distributes a wide range of products. These products include MST, loose leaf chewing tobacco, cigarette papers, cigar wraps, e-cigs, vaporizers, and herbal wraps. TPB recently announced a minority stake in CASH, a privately held CBD extraction and production company, which should complement its current infrastructure, which includes Vapor Beast, Vapor Shark and Vapor Supply. Additionally, we would note that TPB currently sits on the U.S. Hemp Roundtable Board of Directors. Through the first nine months of fiscal 2018, TPB has reported $238.4 mm in revenues, which reflects a YoY growth rate of over 12%. The company has achieved a run rate gross margin of ~44% over the comparable timeframe.

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Canadian LP Commentary on CBD

In addition to the public companies already actively involved in the hemp / CBD market, we would note that all of the major Canadian public cannabis companies have been vocal in terms of expressing their interest in the space, as reflected in the below commentary.

Aphria (APH)

"Depending on the country, there is a lot of movement in Europe…with a CBD light. That CBD, that source from hemp, and what we are contemplating in certain countries, Portugal being one, Italy being one." **Chairman, CEO & President Victor Neufeld (1Q19 Earnings Call)**

Aurora (ACB)

"I think the hemp industry, I tell a lot of the people here that I think it's going to be as big or bigger than the cannabis industry." **Founder, CEO and Director Terry Booth (4Q18 Earnings Call)**

"We've got -- obviously, we're first mover in the hemp space out of any other of our competitors. And we'll enter when it's proper to enter and when it's legal to enter into the United States market." **Founder, CEO and Director Terry Booth (2Q19 Earnings Call)**

Canopy Growth (WEED, Outperform, C$82 PT)

"But CBD every day is moving through a progression where it's going to become part of the normal course available ingredient set…and I think we're doing a very good job of getting in front of that." **CEO Bruce Linton (1Q19 Earnings Call)**

"[CBD is] going to come down to who gets the data to get the branded product that actually works. And I think we're doing a very good job on that and I believe we have a leadership position on that." **CEO Bruce Linton (2Q19 Earnings Call)**

Cronos (CRON)

"At Cronos, we seek to build the world's most innovative cannabinoid company, where we develop and research efficient processes to effectively produce and formulate the full spectrum of cannabinoids, not just THC and CBD." **Chairman, President & CEO Michael Gorenstein (3Q18 Earnings Call)**

Emblem Corp (EMC)

On 8/1/18, Emblem and GreenSpace announced a strategic partnership to develop and commercialize CBD infused health and beauty products for the expected adult-use cannabis market. **(Press Release)**

"Emblem's partnership with GreenSpace Brands is an industry first and represents an incredible opportunity to capitalize on the growing CBD market in Canada." **CEO Nick Dean (Press Release)**

Emerald Health Therapeutics (EMH)

Emerald secured over 500 acres of hemp harvest in 2018 and has contracted for approximately 1000 acres in 2019 to 2022, with the objective of extracting low-cost cannabidiol (CBD). **(Press Release)**

On September 26, 2018 the Company entered into a long-term supply agreement to obtain harvested hemp chaff, plant material consisting of mainly flower and leaf. The supply agreement was signed with Emerald Health Hemp Inc. to purchase CBD containing hemp biomass for extraction into CBD oil. **(Press Release)**

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The Green Organic Dutchman (TGOD)

"We are focused on becoming the Whole Foods of the cannabis industry and recognized as pioneers in the THC/CBD infused beverage industry." **CEO Brian Athaide (Shareholder Letter)**

HEXO Corp (Hexo)

"With respect to the United States, we are in the process of assessing adequate supplies for hemp-derived cannabinoids. Using our intellectual property, we believe we can offer a large range of CBD-based experiences." **HEXO Prospectus (1/25/19)**

Neptune Wellness Solutions (NEPT)

"CBD in the United States-and think about this for a moment where it was federally illegal in the DEA perspective as well as not permitted from an FDA perspective, it is today larger than the vitamin E sector, and it is on track to surpass the omega-3 supplement category very soon." **President, CEO & Director James Hamilton (3Q19 Earnings Call)**

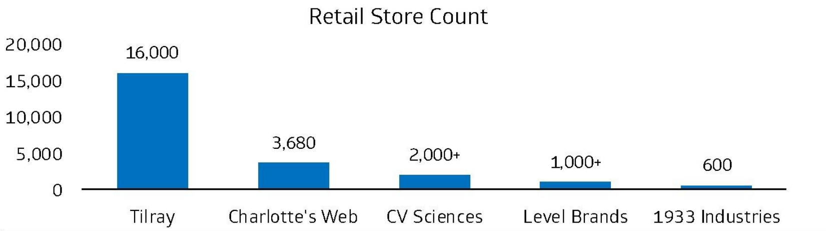
Organigram (OGI)

On 1/21/19, OGI entered an agreement with 1812 Hemp, a New Brunswick base industrial hemp research company to secure supply and support research and development on the genetic improvement of hemp through breeding methods.

Benchmarking

Below we provide a distribution benchmarking analysis on some of the notable publicly traded CBD companies, including Tilray's recently announced acquisition of Manitoba Harvest, which food products are distributed in 16,000 stores across the U.S. and Canada. Among core CBD companies, Charlotte's Web's retail store count of 3,680 stores is almost double that of CV Sciences' 2,000+ retail locations. Level Brands CBD products are in over 1,000 retail locations, while 1933 has a retail footprint spanning 600 stores and counting.

Figure 100 Companies Will Focus on Building our Distribution Footprint



Source: Company Reports and Cowen and Company; Note: TLRY reflects acquisition of Manitoba Harvest

From a revenue perspective, Charlotte's Web is generating the most sales out of what we would classify as core CBD-focused companies. Indeed, in the most recent quarter, the company generated almost $18 mm, which was ~30% higher than number 2 positioned CV Sciences, while Elixinol delivered over $7 mm. We would highlight that for the cross-over brands, Turning Point Brands is currently delivering the highest revenues (consisting of OTP only), while reported revenues factor in adult use and medical sales of THC-infused products, which clearly favor Curaleaf and GTI as two of the more well-known MSOs in the U.S. Tilray revenues of $10 mm are expected to ramp over the

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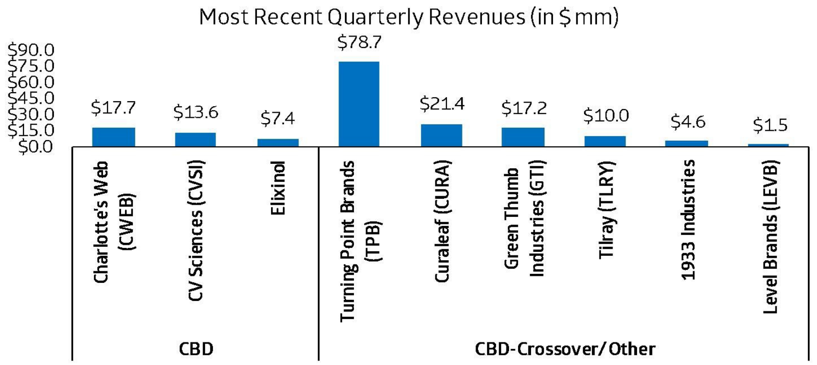
coming quarters, driven by adult use legalization in Canada. 1933 and Level Brands are smaller in scale but continue to post solid growth.

Figure 101 CWeb Leads Core CBD Companies; CBD Crossover Touches Multiple Industries

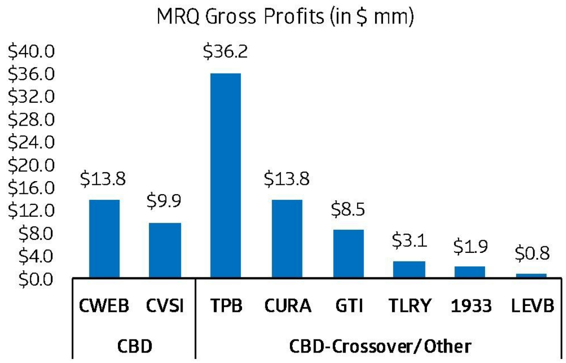


Note: 1933 = 1Q19 (ended 10/18), Level Brands = 4Q18 (ended 12/18), All others are 3Q18 (ended 9/18). AUD/USD = 0.72

Source: Company Reports and Cowen and Company

Nuances around different business models become increasingly apparent when benchmarking gross margins. Charlotte's Web and CV Sciences, which we would classify as finished goods producers, command the highest margins, while Turning Point Brands' unique positioning within OTP products generates margins lower than the level that would be seen for traditional cigarette companies. Core cannabis companies have to contend with being both vertically integrated and in many instances, servicing retail stores, which are lower margin.

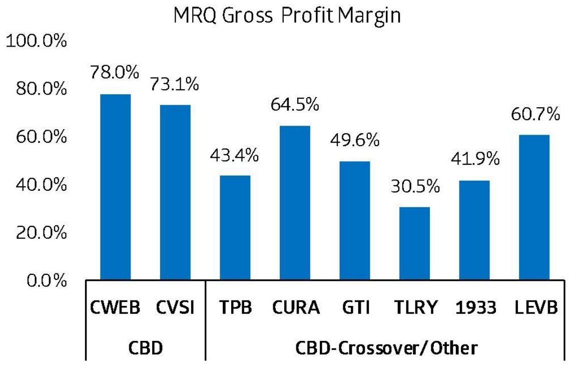
Figure 102 Finished Goods CBD Producers...



Note: 1933 = 1Q19 (ended 10/18), Level Brands = 4Q18 (ended 12/18), All others are 3Q18 (ended 9/18). AUD/USD = 0.72

Source: Company Reports and Cowen and Company

Figure 103 ...Command the Highest Gross Margin

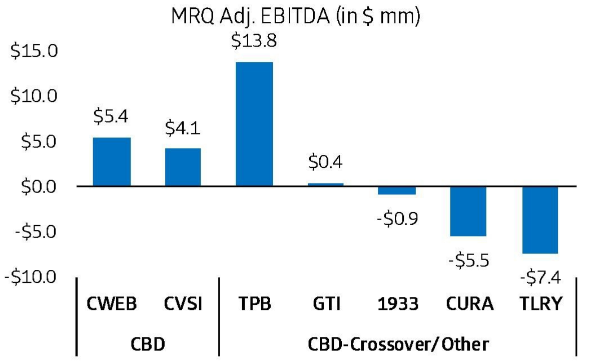


Note: 1933 = 1Q19 (ended 10/18), Level Brands = 4Q18 (ended 12/18), All others are 3Q18 (ended 9/18). AUD/USD = 0.72

Source: Company Reports and Cowen and Company

As evidenced by the above chart, in addition to offering very strong revenue growth prospects, CBD finished products are highly profitable. While it is still early days, both Charlotte's Web and CV Sciences are EBITDA positive, generating 30% margins in the most recent quarter, which is an encouraging sign. This intersects at a period where other companies across the broad cannabis landscape have been investing heavily in SG&A, which includes but is not limited to headcount increases and R&D.

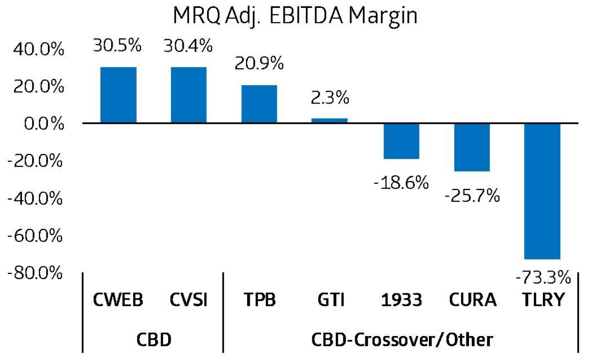
Figure 104 CWEB and CVSI Are Posting Strong EBITDA...



Note: 1933 = 1Q19 (ended 10/18) (ended 12/18), All others are 3Q18 (ended 9/18).
AUD/USD = 0.72

Source: Company Reports and Cowen and Company

Figure 105 ...With Margins Exceeding 30%

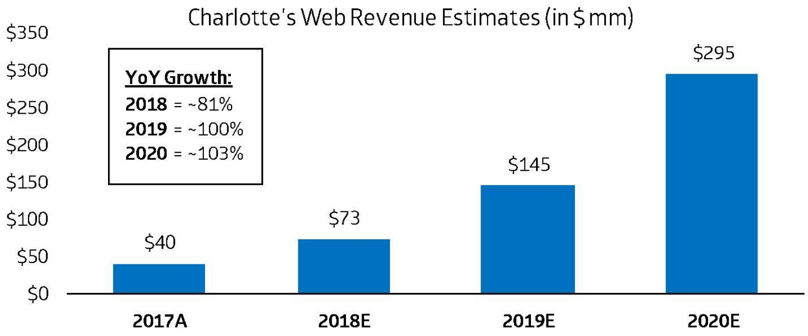


Note: 1933 = 1Q19 (ended 10/18) (ended 12/18), All others are 3Q18 (ended 9/18).
AUD/USD = 0.72

Source: Company Reports and Cowen and Company

While Charlotte's Web generated 172% growth last year, we can see that sales are expected to remain robust. Charlotte's Web is guiding for 2018 revenues to be between $65-80 mm, which would represent ~81% growth at the midpoint of the range. For 2019, the company is guiding for $120-170 mm, which would represent 100% growth at the midpoint. Looking out to 2020, current consensus estimates of $295 mm would imply further robust growth at over 100%. With momentum in CBD expected to ramp on a go-forward basis, we would look for these more established, well capitalized companies such as Charlotte's Web, CV Sciences and Elixinol to consolidate market share in the form of distribution gains from new channels coming online as well as a from considerable amount of consolidation.

Figure 106 Charlotte's Web's Top-Line Outlook



Source: Company Reports, Bloomberg

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Private Companies

Botanica. Best known for its portfolio of adult use edible brands, which includes Spot, Journeyman and Mr. Moxey's Mints, Botanica recently launched a CBD only line of Mr Moxey's Mints, following the passage of the 2018 Farm Bill. The products are currently offered in the U.S. and the U.K. and are available in one package format consisting of 60 mints at 5 mgs per CBD each. In the U.S., the mints retail for ~$40 per tin and going forward, the company will look to come to market with smaller / lower priced offerings to help drive immediate point of sale consumption across brick and mortar retail locations. Over time, management forecasts that ~40% of sales will come from e-commerce, with the balance coming distribution.

GenCanna. Based in Kentucky, GenCanna is a cultivator of premium hemp-derived CBD. Additionally, the company offers whole-plant hemp extracts in the form of full spectrum or isolated crystalline cannabinoid CBD for wholesale, available to customers in the form of powders and oils and can be prepared as a proprietary water dispersible powder to support large scale manufacturing needs. Their powders have a CBD concentration of 99.5%+, which is isolated using CO2 extraction and crystal precipitation (as is their bulk oil). GenCanna also offers a full range of packaged goods including bottled oil drops, capsules and topical creams. All GenCanna products are produced in an FDA registered and inspected, food-grade, GMP-compliant facility and are tested by third parties for safety and quality. In November 2018, MariMed (MRMD, not covered) invested $30 mm in GenCanna, which established a long-term supply agreement whereby GenCanna became MariMed's global hemp CBD supplier.

Highline Wellness. Co-founded by former Cowen alum Chris Roth and his business partner Chris D'Alberti, Highline Wellness is a NYC-based CBD company currently offering tinctures, chews (gummies) and topicals (pain cream). Highline products are manufactured in Florida and the company sells direct-to-consumer. According to the company, this provides for competitive pricing relative to their peers (which we would classify as broadly mainstream). While still early days, Highline has an active presence on social media platforms including a loyal group of followers on Instagram, which has resulted in top line momentum to start off the year.

Lazarus Naturals. Launched in 2014, Lazarus Naturals is an Oregon-based CBD company, which offers products ranging from tinctures and capsules, to topical oils and balms as well as isolates. Lazarus is value priced across the competitive set with one of the lowest price/mg of CBD relative to the companies that we benchmarked against. The company offers 60% discounts to veterans, individuals on long-term disabilities as well as for low-income households. All sales primarily come from e-commerce and products are shipped to all 50 states across the U.S.

Lord Jones. Founded by Robert Rosenheck and Cindy Capobianco, Lord Jones manufactures and distributes super-premium CBD infused products. The company provides a broad array of product offerings, including tinctures, confections, capsules, and skincare, among others. Clearly catered towards the premium-end of the market, Lord Jones has announced several high-profile partnerships over the past couple of years which includes collaborating with Equinox, partnering with luxury hotel group, The Standard, and most recently, being the first CBD brand carried by Sephora.

Mary's. Founded in 2013, Mary's produces and sells cannabis and hemp-derived CBD products across three main segments, which include:

- **Mary's Medicinals.** Cannabinoid infused products for relief, available in 11 U.S. states.
- **Mary's Nutritionals.** Hemp-derived CBD products for health & wellness, sold in retailers and online in the U.S. and international markets

- **Mary's Whole Pet.** Whole plant CBD remedies for pets, sold in retailers and online in the U.S. and international markets.

Mary's is a high-end brand, focused on clean delivery methods through its transdermal patches, topicals and patented gel pen technologies. In March 2018, Mary's Nutritionals was chosen as the preferred CBD vendor partner for all Ritz Carlton, Marriott, JW Marriott, W, and St. Regis Locations.

Mile High Labs. Based in Colorado, Mile High Labs is the largest extractor of CBD in the world. The company sources hemp from third party cultivation partners across four states, which include Colorado, Oregon, New York, and Kentucky. Mile High Labs extracts exclusively from industrial hemp flower material to create full spectrum extract, distillate and isolate. Their full spectrum extract contains a full range of CBD terpenes and over 60% CBD on average, making it useful for low concentration formulations in holistic and wellness applications, including tinctures and capsules. Mile High Labs distillate is refined using proprietary molecular distillation technology and contains ~85% CBD on average, making it ideal for vape pen cartridges, tinctures and other high potency formulations. The company's isolate contains ~99% CBD and is used as a main ingredient in bioceutical and nutritional product applications. Mile High offers end-to-end certified GMP hemp CBD manufacturing. In October 2018, Mile High Labs raised $35 mm in a Series A, which according to CEO Jason Roth represented a "record-breaking investment [which] is a reflection of the growth in demand for quality CBD products and Mile High Labs' unique ability to meet that demand." CFO Jonathan Hilley also recently noted that he believes "the CBD market is in the early stages of a 20-year secular growth trend."

Papa & Barkley. Papa & Barkley is based in California, with a diverse portfolio of products and lines. The company's *Releaf* line spans multiple form factors, including tinctures, capsules, patches, and balms, among others, which are comprised of different THC:CBD ratios. Papa & Barkley's *Essentials* line is specifically focused on CBD, and as it stands, they offer a tincture in both a 15 ml bottle (450 mg CBD) and 30 ml bottle (900 mg CBD) and will soon be rolling out capsules, as well as an extra strength pain balm. The company is only in California currently, but is looking at going to market in three other primary states, as well as three other secondary states.

Recess. Launched in October 2018, Recess is a wellness company currently specializing in beverages which are infused with full spectrum hemp extract. The company has positioned itself as a modern day lifestyle brand and daytime productivity enhancer that offers a universal message and idea instead of being anchored specifically to CBD. This strategy shares similarities with traditional CPG products, such as energy drinks and soda, which are not marketed for the active ingredient, but instead as the solution. While the current product portfolio includes sparkling beverages only, Recess plans on rolling out a plain water, as well as powders, which will cater to on-premise consumption occasions, such as coffee shops, juice shops and cocktail bars.

Reliva CBD Wellness. Reliva is a CBD-focused company, which form factors include tincures, shots, sprays, topicals, gummies, and pet care. The company is run by Miguel Martin, who previously served as the President and GM of Logic Technology Development, an e-cigarette manufacturer in the U.S. Reliva's products are focused on value from an absolute pricing perspective, as nothing sells for over $19.99 at retail. The company is unique insofar as they do not offer e-commerce, nor do they make and claims on efficacy or rely on testimonials or influencer marketing, which Martin believes will create a narrative on responsibility. Reliva focuses on independent c-stores and grocery channels and is expected to be in ~1,000 stores by the end of March, growing to 4,000-5,000 stores by the end of the summer with the goal of doubling that store count to ~10,000 locations by year-end.

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Health Care: Drug Retailer Perspective (Rhyee)

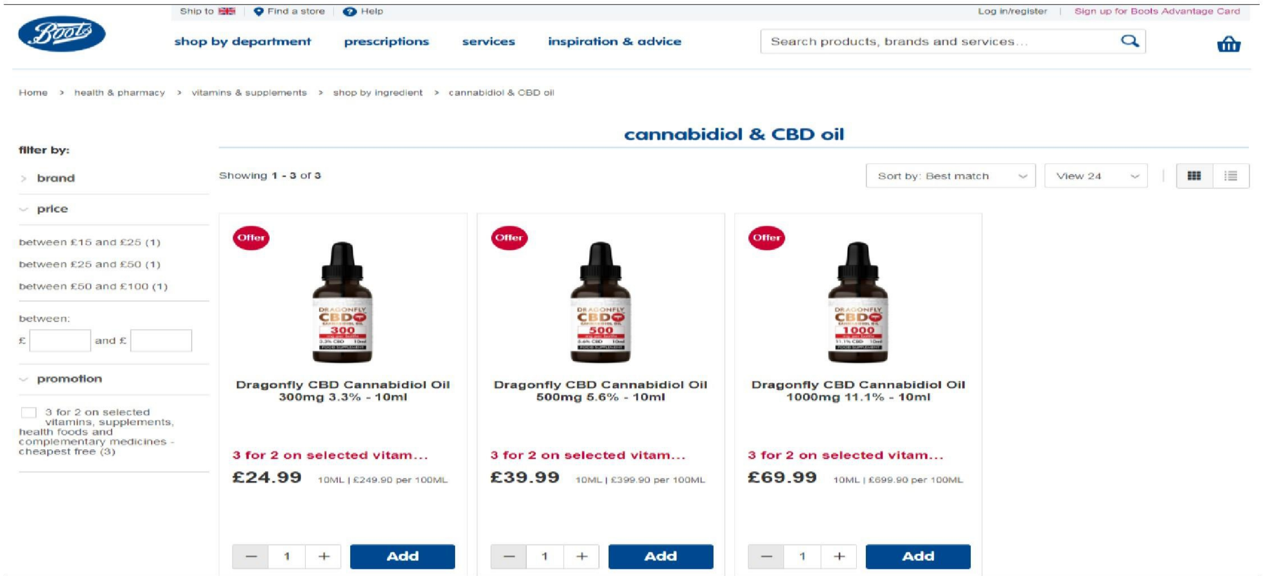
CBD Products Gaining Traction With Independent Pharmacies

CBD products appear to be gaining traction with independent pharmacies, many of whom are already selling or planning to sell CBD oils. We don't find this surprising given the high demand for and strong expected growth potential of CBD products, as well as the differentiation it affords independents relative to larger chain pharmacies. Independent pharmacies also likely find the high-margin profile of CBD oils attractive, which we suspect is similar to those of more traditional over-the-counter drugs. OTC drugs are a substantial profit driver for independent pharmacies. The greater acceptance of and improving sentiment towards CBD products as a viable business for independent pharmacies is evidenced by a panel held by the National Community Pharmacists Association (NCPA) at its annual convention in October 2018, which served to educate independent pharmacy owners of the legality, clinical uses, potential risks and marketing tactics of CBD oils. For those independent pharmacies that have decided to sell CBD oils, ensuring that they provide high-quality products is paramount, with a focus on looking at the bioavailability of CBD. Additionally, independent pharmacies emphasize the importance of patient education, in regards to treatment and potential side effects. Anecdotally, reports note that many independent pharmacies have received positive feedback from patients, attributing diminished opioid dependence and pain relief to CBD oils.

Large Pharmacy Chains Don't Appear As Quick To Offer CBD Oils

Large pharmacy chains, such as CVS Pharmacy and Walgreens, don't currently sell CBD oil. WBA management has noted that, while the company is monitoring the CBD market and the potential to sell it, WBA currently has no public stance on whether it plans to sell CBD products future. Interestingly, Boots, which is a pharmacy chain in the U.K. owned by WBA, sells CBD oil in three different doses (Figure 107). As such, we wouldn't be surprised if WBA decides to sell CBD products in the future.

Figure 107 Boots - Cannabidiol & CBD Oil Offerings



Home > health & pharmacy > vitamins & supplements > shop by ingredient > cannabidiol & CBD oil

cannabidiol & CBD oil

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brand
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between £15 and £25 (1)
between £25 and £50 (1)
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promotion
☐ 3 for 2 on selected vitamins, supplements, health foods and complementary medicines - cheapest free (3)

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Dragonfly CBD Cannabidiol Oil 300mg 3.3% - 10ml
3 for 2 on selected vitam...
£24.99 10ML | £249.90 per 100ML

Dragonfly CBD Cannabidiol Oil 500mg 5.6% - 10ml
3 for 2 on selected vitam...
£39.99 10ML | £399.90 per 100ML

Dragonfly CBD Cannabidiol Oil 1000mg 11.1% - 10ml
3 for 2 on selected vitam...
£69.99 10ML | £699.90 per 100ML

Source: Boots.com and Cowen and Company

Health Care: Payor Perspective (Rhyee)

Based on our conversations with managed care companies, whether CBD oils will be covered as a medical benefit by government sponsored health programs is determined by the Center for Medicare and Medicaid Services (CMS) and state governments. Currently, CBD products aren't a covered benefit or an extra benefit that has been approved by CMS or states, and it isn't known at this time whether CMS or states governments are considering reimbursement for CBD products. That said, based on our discussions with a number of payors, if a state government were to provide reimbursement for CBD products under Medicaid, it would have to add CBD oils as a covered benefit under the state plan, which may or may not require CMS approval. We note that CMS and states do provide reimbursement for non-traditional treatments, if they determine that there's some benefit, such as issues around social determinants, As such, we see the potential for CBD oils to become a covered benefit under CMS, even without FDA approval.

On the commercial side of the market, payors we spoke with noted that CBD oils aren't eligible for coverage under commercial health plans because they're not regulated by the FDA. There are a couple of exceptions, such as GWPH's Epidiolex, which is a prescription pharmaceutical formulation of highly purified, plant-derived cannabidiol for the treatment of seizures associated with Lennox-Gastaut syndrome (LGS), or Dravet syndrome in patients two years of age or older. Epidiolex is covered by commercial insurance as it is an FDA approved drug. Payors noted three factors complicating commercial coverage of CBD oils, including (1) legal issues, as CBD oils derived from THC (cannabis) aren't legal if they contain equal to or more than 0.3% THC; (2) lack of regulation by the FDA; and (3) their availability as OTC medications.

Health Care: Provider Perspective (Rhyee)

The certified use of medical marijuana appears to be gaining acceptance by the provider community, as evidenced by the recent distribution of a memo by the chief physician executive of Intermountain Healthcare, Utah's largest health provider, to its network of providers that the health system is lifting its prior directive that advised physicians not to write letters recommending cannabis treatments. However, it's difficult to assess providers' stance on recommending the use of CBD oils. With greater clinical evidence supporting the efficacy in treating various conditions, we may very well see doctors recommend CBD oils as well, which some claim to be effective in treating loss of appetite in cancer patients, chronic pain, epilepsy, Huntington's disease, sleep disorders, multiple sclerosis symptoms, schizophrenia, and glaucoma.

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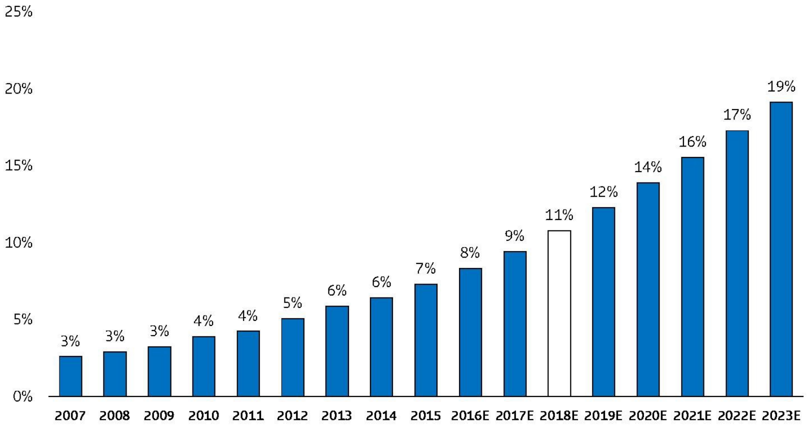
eCommerce To Be A Key Consumer Distribution Channel Long Term (Blackledge)

A significant portion of the CBD products that are currently available fall into the Personal Care / Beauty Products or Vitamins and Food Supplements verticals, both of which are part of the larger Consumables category. Consumables continues to be a highly under-penetrated eCommerce vertical in the midst of a progressive shift online, and we see an opportunity for these CBD companies to expand online as secular tailwinds continue to drive eCommerce growth for the larger Consumables market. For context, we forecast overall US Consumables eCommerce sales of $51BN in '18, or 11% eCommerce penetration, rising to $111BN in '23 or 19% eCommerce penetration.

Longer term, Consumables eCommerce market share, led by Amazon, should rise well above our 19% penetration forecast in '23, as the sector favors eCommerce vs. Brick & Mortar, for multiple reasons, namely (1) changing consumption trends, particularly with younger demographics, who would prefer to "Skip the Trip" for these high replenishment factor goods; and (2) rising smart speaker penetration, like AMZN's popular Echo device, driving gains in high replenishment re-ordering.

Figure 108 U.S. eCommerce Consumables Penetration '07-'23E



Source: Cowen and Company; U.S. Census Bureau

Due to the aforementioned macro factors, we view eCommerce as a major potential customer distribution channel for CBD longer term as consumers' spending habits continue to shift, and purchasing of Personal Care Products, Vitamins & Food Supplements and other Consumable items moves online at an accelerated rate. We expect growth within the Consumables (Personal Care, HH Goods, etc) and Food & Beverage verticals to consistently outpace overall eCommerce growth '18-'23, resulting in an increased share of U.S. eCommerce sales.

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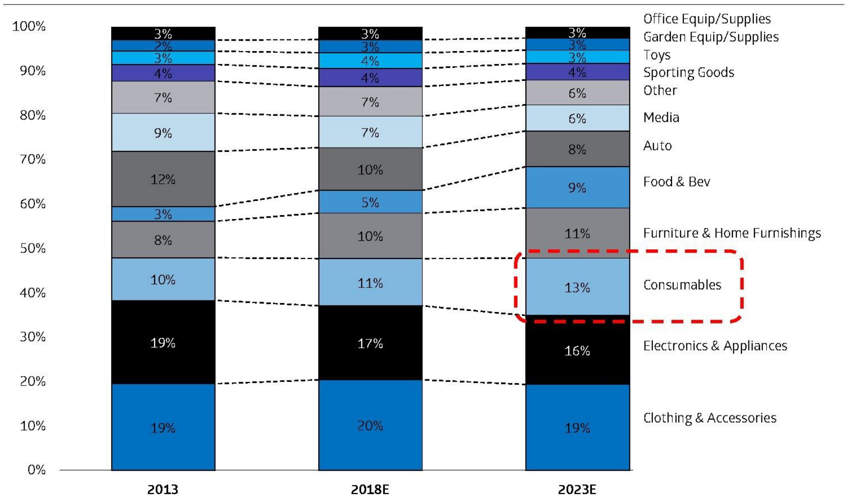
Figure 109 Share Of U.S. eCommerce Sales '13 vs. '18E vs. '23E



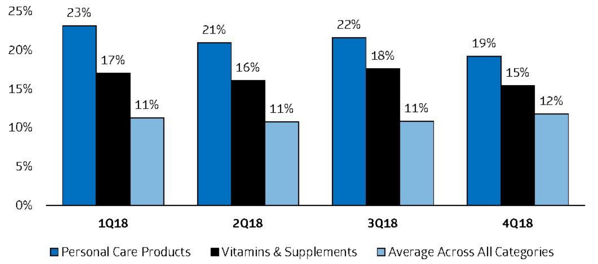
Source: Cowen and Company; U.S. Census Bureau

Analyzing Two Key Verticals for CBD Adoption

As part of our monthly survey of 2,500 US consumers, we ask Amazon.com purchasers to indicate which categories (out of a list of 30) they purchased on Amazon in the past 30 days. Our data shows that Personal Care Products and Vitamins & Supplements were more likely to be purchased (vs. the average across all categories) by both Prime and Non-Prime members throughout 2018.

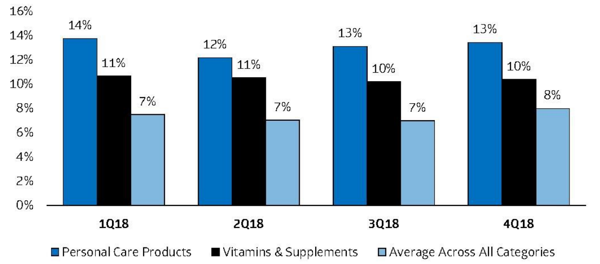
Taking a closer look at 4Q18, in each month (on average) 19% of all Amazon Prime Purchasers bought at least one personal care product and 15% purchased a Vitamin or Supplement, while the average purchase rate across all 30+ categories was only 12% of Prime purchasers. We noted a similar trend among Non-Prime Purchasers in 4Q18, with 13% who bought Personal Care Products and 10% who bought Vitamin or Supplements, compared to the average purchase rate across all categories of 8%.

Figure 110 Prime Member Purchaser % By Vertical, 1Q18-4Q18



Source: Cowen proprietary Consumer Internet Survey, n=~2500, Dec '18

Figure 111 Non-Prime Purchaser % By Vertical, 1Q18-4Q18



Source: Cowen proprietary Consumer Internet Survey, n=~2500, Dec '18

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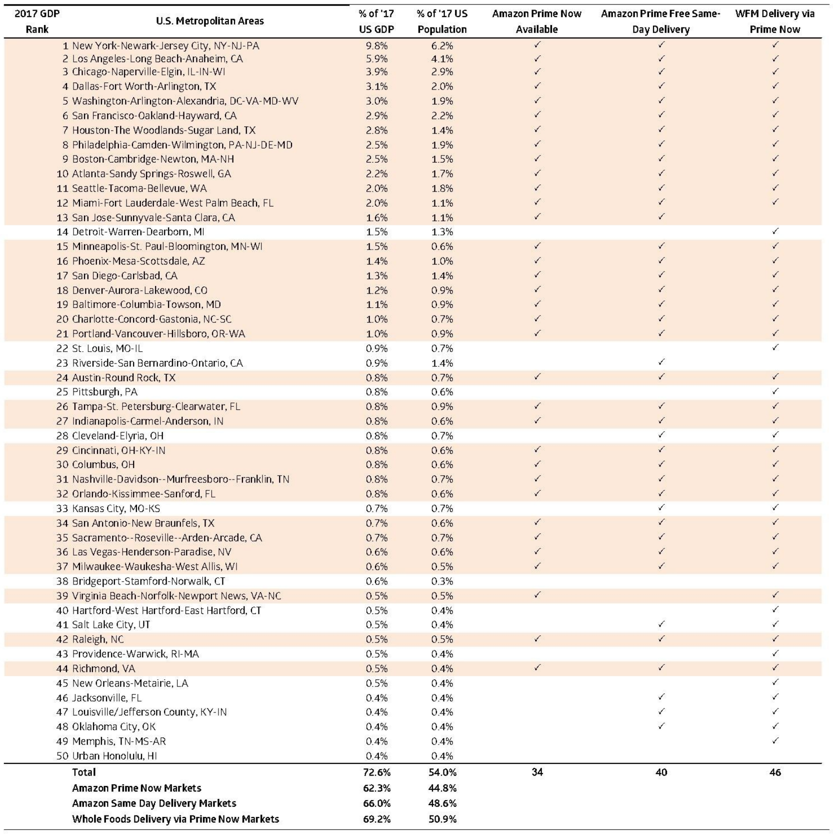
Amazon Has A Modest But Expanding Physical Footprint

For CBD companies, expansion through Amazon's retail locations and more importantly Whole Foods' expanding retail footprint are also attractive avenues for reaching new customers (assuming CBD companies can convince Amazon and Whole Foods to carry their products). While we currently lack insight into when CBD products may become available in Whole Foods stores, or what a regional or national rollout might look like, below we analyze Amazon's physical footprint to highlight the potential for distribution.

Amazon's expanding physical footprint is made up of a small number of Go Stores, Amazon Fresh Grocery Pickup in Seattle, Amazon Branded Book Stores and most notably its Whole Foods Market business. Whole Foods is a health focused supermarket chain based out of Austin TX that operates ~470 US locations and was purchased by Amazon in Aug '17. Since acquiring Whole Foods, Amazon has deeply integrated it with the company's Prime offering. In combination with Amazon's Prime Now platform, Whole Foods is now offering 2-hour delivery on thousands of in-store items in 63 cities, which account for over 50% of the US population and over 2/3rds of US GDP. Whole Foods also offers curbside pickup in over 20 markets.

Figure 112 Amazon Prime Now & Same Day Delivery Top 50 US Metro Areas By 2017 GDP (%)



2017 GDP Rank	U.S. Metropolitan Areas	% of '17 US GDP	% of '17 US Population	Amazon Prime Now Available	Amazon Prime Free Same-Day Delivery	WFM Delivery via Prime Now
1	New York-Newark-Jersey City, NY-NJ-PA	9.8%	6.2%	✓	✓	✓
2	Los Angeles-Long Beach-Anaheim, CA	5.9%	4.1%	✓	✓	✓
3	Chicago-Naperville-Elgin, IL-IN-WI	3.9%	2.9%	✓	✓	✓
4	Dallas-Fort Worth-Arlington, TX	3.1%	2.0%	✓	✓	✓
5	Washington-Arlington-Alexandria, DC-VA-MD-WV	3.0%	1.9%	✓	✓	✓
6	San Francisco-Oakland-Hayward, CA	2.9%	2.2%	✓	✓	✓
7	Houston-The Woodlands-Sugar Land, TX	2.8%	1.4%	✓	✓	✓
8	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	2.5%	1.9%	✓	✓	✓
9	Boston-Cambridge-Newton, MA-NH	2.5%	1.5%	✓	✓	✓
10	Atlanta-Sandy Springs-Roswell, GA	2.2%	1.7%	✓	✓	✓
11	Seattle-Tacoma-Bellevue, WA	2.0%	1.8%	✓	✓	✓
12	Miami-Fort Lauderdale-West Palm Beach, FL	2.0%	1.1%	✓	✓	✓
13	San Jose-Sunnyvale-Santa Clara, CA	1.6%	1.1%	✓	✓	
14	Detroit-Warren-Dearborn, MI	1.5%	1.3%			✓
15	Minneapolis-St. Paul-Bloomington, MN-WI	1.5%	0.6%	✓	✓	✓
16	Phoenix-Mesa-Scottsdale, AZ	1.4%	1.0%	✓	✓	✓
17	San Diego-Carlsbad, CA	1.3%	1.4%	✓	✓	✓
18	Denver-Aurora-Lakewood, CO	1.2%	0.9%	✓	✓	✓
19	Baltimore-Columbia-Towson, MD	1.1%	0.9%	✓	✓	✓
20	Charlotte-Concord-Gastonia, NC-SC	1.0%	0.7%	✓	✓	✓
21	Portland-Vancouver-Hillsboro, OR-WA	1.0%	0.9%	✓	✓	✓
22	St. Louis, MO-IL	0.9%	0.7%			✓
23	Riverside-San Bernardino-Ontario, CA	0.9%	1.4%		✓	
24	Austin-Round Rock, TX	0.8%	0.7%	✓	✓	✓
25	Pittsburgh, PA	0.8%	0.6%			✓
26	Tampa-St. Petersburg-Clearwater, FL	0.8%	0.9%	✓	✓	✓
27	Indianapolis-Carmel-Anderson, IN	0.8%	0.6%	✓	✓	✓
28	Cleveland-Elyria, OH	0.8%	0.7%		✓	✓
29	Cincinnati, OH-KY-IN	0.8%	0.6%	✓	✓	✓
30	Columbus, OH	0.8%	0.6%	✓	✓	✓
31	Nashville-Davidson--Murfreesboro--Franklin, TN	0.8%	0.7%	✓	✓	✓
32	Orlando-Kissimmee-Sanford, FL	0.8%	0.6%	✓	✓	✓
33	Kansas City, MO-KS	0.7%	0.7%		✓	✓
34	San Antonio-New Braunfels, TX	0.7%	0.6%	✓	✓	✓
35	Sacramento--Roseville--Arden-Arcade, CA	0.7%	0.7%	✓	✓	✓
36	Las Vegas-Henderson-Paradise, NV	0.6%	0.6%	✓	✓	✓
37	Milwaukee-Waukesha-West Allis, WI	0.6%	0.5%	✓	✓	✓
38	Bridgeport-Stamford-Norwalk, CT	0.6%	0.3%			
39	Virginia Beach-Norfolk-Newport News, VA-NC	0.5%	0.5%	✓		✓
40	Hartford-West Hartford-East Hartford, CT	0.5%	0.4%			✓
41	Salt Lake City, UT	0.5%	0.4%		✓	✓
42	Raleigh, NC	0.5%	0.5%	✓	✓	✓
43	Providence-Warwick, RI-MA	0.5%	0.4%			✓
44	Richmond, VA	0.5%	0.4%	✓	✓	✓
45	New Orleans-Metairie, LA	0.5%	0.4%			✓
46	Jacksonville, FL	0.4%	0.4%		✓	✓
47	Louisville/Jefferson County, KY-IN	0.4%	0.4%		✓	✓
48	Oklahoma City, OK	0.4%	0.4%		✓	✓
49	Memphis, TN-MS-AR	0.4%	0.4%			✓
50	Urban Honolulu, HI	0.4%	0.4%			
	Total	**72.6%**	**54.0%**	**34**	**40**	**46**
	Amazon Prime Now Markets	**62.3%**	**44.8%**			
	Amazon Same Day Delivery Markets	**66.0%**	**48.6%**			
	Whole Foods Delivery via Prime Now Markets	**69.2%**	**50.9%**			

Source: Company reports, Cowen and Company, US Bureau of Economic Analysis

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Competition From AMZN Private Label Could Be A LT Concern, Offset By CBD's Established Brands

Should the market for CBD products expand rapidly over the next several years, one source for increased competition could be Amazon's own first party (private label) business. Amazon offers private label goods across the gamut of product verticals, including consumables and vitamins.

Per industry participants that have discussed AMZN's private label business with us, Amazon's approach is similar across most new product lines, most notably that the company is now focusing less on heavy discounting to take share from competition. By contrast, we believe that while any foray into CBD could start with a big push by AMZN to gain share, if sales and reviews aren't working, AMZN would likely reduce resources quickly. Additionally, Amazon Private Label tends to replicate top sellers for goods that are high replenishment, commodity-type products with undifferentiated branding, then add secondary brands over time. Amazon private label has in some cases captured huge market share early (anywhere from 25-40% market share by SKU within the first six months).

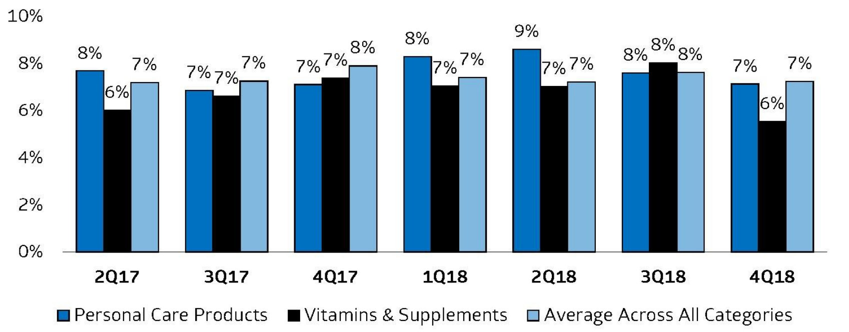
AMZN also tends to have the most success in verticals where branding is less important (a fact that could provide an advantage to more established CBD companies). The widespread availability and acceptance by a retailer such as Amazon could also help to drive mainstream adoption of CBD products and thus provide a benefit for the industry as a whole.

Other Potential Platforms: EBAY Has The Reach To Make An Impact

There are other platforms that may be easier to break into than Amazon that would also provide an avenue to reach a wide array of consumers. Ebay could be an alternative for CBD companies to tap into. EBAY has been losing share in eCommerce over the last several years, and developing a leading marketplace in a new product vertical such as CBD products could be an incentive to become an early adopter. Ebay currently has 179MM active buyers on the platform worldwide, and the company generated over $90BN in GMV in 2018.

Our survey indicates that unlike Amazon, EBAY has had less success in driving consistent purchasing in areas like personal care and beauty as well as in vitamins and supplements. Our data suggests that unlike Amazon, these two key verticals are purchased at about the same rate as any other category, which suggests that there is an opportunity for these verticals to grow meaningfully, in our view.

Figure 113 EBAY Purchaser % By Vertical, 2Q17-4Q18



Source: Cowen proprietary Consumer Internet Survey, n=~2500, Dec '18

Cannabidiol (CBD) Entrance Into Mass Retail May Start In Beauty Before Entering Broadlines (Chen)

Cowen's take is that first movers may predominantly consist of independent operators, followed by beauty, convenience, and other major chains. We believe that growth could take on a barbell dynamic, with early adopters being both high-end luxury players alongside lower-end local convenience shops, with middle-ground retailers including WMT, TGT, and COST likely being the last to sell CBD products after a test-and-learn phase is observed among the early adopters. We expect that CBD in beauty could be a ~$1bn opportunity within skincare specifically; the skincare category currently comprises ~23% of the overall $87bn beauty products market.

Luxury Department Stores Are Early Adopters. A number of independent retail operators have recently announced plans to expand their physical presence to incorporate CBD. For example, luxury department store Barneys New York is adding a 300-square-foot cannabis store-within-store concept called "The High End" to its flagship store in Beverly Hills, where it will sell CBD beauty products and vintage paraphernalia. Neiman Marcus also announced its "Trending Beauty" initiative, which includes carrying leading CBD brands (5 SKUs) online and within 5 of its 44 stores.

Another example is Green Growth Brands (CSE: GGB, not covered) recently announcing a deal with DSW Inc. (DSW, not covered) to sell its Seventh Sense brand within 96 US-based DSW stores; this announcement comes after a 10-week trial phase where 74.4% of product presented on shelves was reportedly sold. GGB also announced it will open 108 stores within Simon Property malls (SPG, not covered), starting in March 2019.

Beauty Could Be First Major Distribution Channel. Cowen believes that the future of beauty will increasingly emphasize clean, natural ingredients within products – in line with the broader health and wellness movement that is permeating into various other retail verticals. Therefore, we believe that beauty could be the first major distribution channel to adopt CBD given the compound's properties as a natural remedy to manage pain, inflammation, and anxiety.

Sephora.com currently carries 3 SKUs with CBD dosages (Lord Jones and Josie Maran), and a variety of hemp-based products. Meanwhile, ULTA only has hemp-based offerings but could adopt a comparable line to Sephora within its Prestige assortment. Average Unit Retail (AUR) for the three Sephora CBD SKUs is ~$70, or $1.85/mL, which supports our view that adopters will skew toward Prestige-cosmetics-oriented retailers such as specialty beauty players (Sephora, ULTA) and department stores (JWN, M), before Mass cosmetics carriers like grocery stores, pharmacies or broadline retailers adopt it, as price points are closer to $10/SKU.

Historically, broadline retailers, including WMT, TGT, and COST have shied away from entering controversial categories in their earlier innings, preferring to be last movers and not create controversies. We do note, TGT has previously made small inroads into CBD. According to AdAge, TGT briefly sold hemp and CBD oils in late 2017 before pulling all the products. Also, we note, WMT's website does sell several hemp oil products.

Figure 114 CBD Presence Is Limited In Mass Retail Outlets

	Broadline			Beauty		Pharmacy/Mass	
	WMT	TGT	COST	ULTA	Sephora (LVMH)	CVS	WBA
Carry CBD Products	✗	✗	✗	✗	✓	✗	✗
Carry Hemp Seed Products	✓	✗	✗	✓	✓	✓	✗
CBD SKU Count	n/a	n/a	n/a	n/a	3	n/a	n/a

Note: CVS and WBA are covered by Charles Rhyee

Source: Cowen and Company, company websites; Note: Search "CBD oil, CBD, Cannabis, Cannabis Oil"

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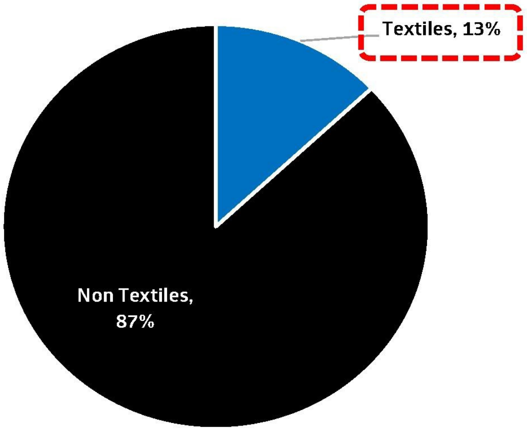
Growing Application For Hemp And CBD Within The Apparel & Footwear Market (Kernan)

With the changing tide on marijuana legalization and hemp cultivation, the use case for and interest in CBD applications are rapidly expanding. We think there lies within this fervor potential for greater utilization of hemp derived textiles in apparel, footwear and accessories after largely being relegated to specialist brands with a few exceptions. The Western Producer, a Western Canada weekly agriculture publication, commented that "industrial hemp could reach whole crop utilization" in an article published on 1/10/19 "Revenue Streams Expand For Hemp Growers." We think this compliments the sustainability movement that is gaining ground in global apparel and footwear production and among Millennial and Gen Z consumers. Western Producer quotes Jan Slaski, senior researcher for InnoTech Alberta, that "textile applications have brought [about] the development of hemp-based uniforms, socks, underwear and other apparel…" as its properties, which Patagonia describes as "linen-like," provide a "quality suitable for fine textiles."

Approximately $820MM worth of legal hemp products were sold in the U.S. in 2017 and roughly 13% of those hemp-based products are textiles according to Entrepreneur's 9/4/18 article, "The Hemp Business Is Booming." The article's author Rose Leadem cites a history of the crop dating back "to the 1600s when growing hemp was encouraged for use in sails, ropes and clothing." This period was followed by years of back and forth regulation that alternately banned and unbanned hemp cultivation in the U.S. While the 2014 U.S. Farm Bill allowed for heavily restricted industrial hemp cultivation, the more recent 2018 U.S. Farm Bill, as described by the Brookings Instituted, offers a more "expansive" cultivation of hemp.

Figure 115 Textiles Have Low Penetration Among Legal U.S. Hemp Products (2017)



Source: Cowen and Company; Western Producer

To frame the market opportunity for greater hemp utilization as a textile in apparel and footwear from what is likely a nascent penetration currently, the U.S. clothing and accessories market reached store sales of $262 billion in 2017 as reported by the U.S. government, with potential to grow to $275B in 2018. We note that there are some global brands that offer hemp fiber, mostly but not all on a limited basis, in their clothing and footwear assortment. These brands include Patagonia, Columbia Sportswear's prAna brand, Orvis, Thought Clothing, Toad&Co, Jungmaven, Eartheasy, Sanuk, Toms,

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Adidas and Nau. Nike offered a hemp-based SB Dunk Low sneaker in 2004, re-issuing the shoe in 2016 around Earth Day. Patagonia, a $1B global brand that encompasses a focus on the environment and social responsibility in its mission statement, views hemp as a "natural fiber that's cultivated with low impact on the environment." The brand's assortment includes some hemp-based products made with 100% hemp, which it imports from China, or blended with other fibers like recycled polyester, organic cotton, and spandex.

Figure 116 Patagonia Iron Forge Hemp Canvas Ranch Jacket (55% Hemp)

Source: www.patagonia.com

Figure 117 prAna Sharla Sweater (55% Hemp)

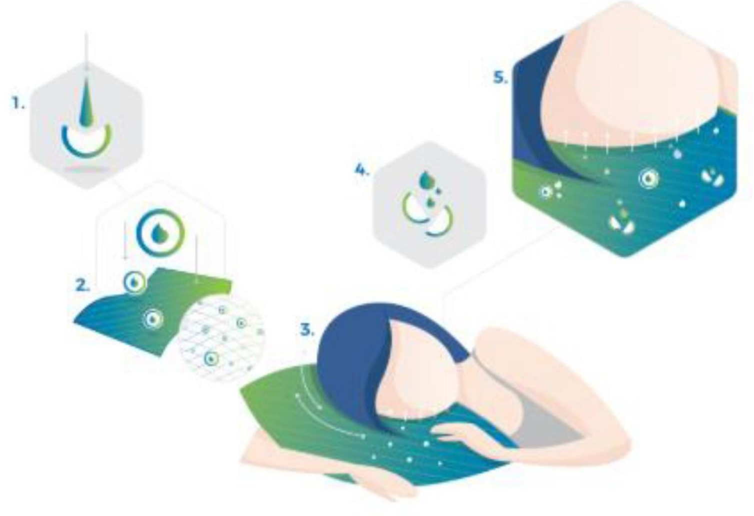
Source: www.prana.com

Figure 118 Men's (Hemp upper)

Source: www.sanku.com

There is also a growing market for apparel and footwear that provide recovery attributes. For example, Under Armour has its Recovery line of apparel that includes Celliant which is designed to "capture body heat and convert it to infrared light that is returned to your body, boosting localized blood flow and upping the amount of oxygen reaching your muscles." Celliant is described as "utilizing a proprietary mineral matrix that can be embedded into the core of a yarn or applied to a wide variety of fabrics." This demonstrates the ability to weave outside attributes into existing textiles to add beneficial components beyond just providing an item of clothing. With CBD being reported as having health and wellness properties, such as to combat inflammation, there could be potential for CBD to be infused into textiles. Canada's *Fashion* magazine recently highlighted Devan Chemicals in its 1/4/19 article, "CBD Is Everywhere. Will CBC-Infused Clothing Be Next?" Devan Chemicals is a Belgium-based company that has "added CBD to their textile solutions portfolio." The company's "R Vital" fabric reflects a weave of microcapsules of CBD that release when a person wears the clothing as demonstrated in their website's flow chart below. While still early stage, perhaps there will be demand for widescale CBD infused textiles, although, as the article points out, it is unclear how the "potency" holds up over time and after washing.

Figure 119 Devan Chemical's R-Vital – Flow Chart For A CBD-Infused Textile



Source: Cowen and Company; Devan Chemical

Tilray And ABG Sign Partnership

Privately held Authentic Brands Group (ABG) recently signed a deal with Tilray to capitalize on the general wellness capabilities of CBD. ABG's product portfolio includes athletic based names such as Muhammad Ali, Shaquille O'Neal, Dr. J, Nautica and Prince. The muscle recovery and wellness capabilities of CBD create branding opportunities within these brands. CBD oil also has wellness characteristics beneficial for skin care products. ABG's Nine West Brand will offer wellness products containing CBD powered by Tilray.

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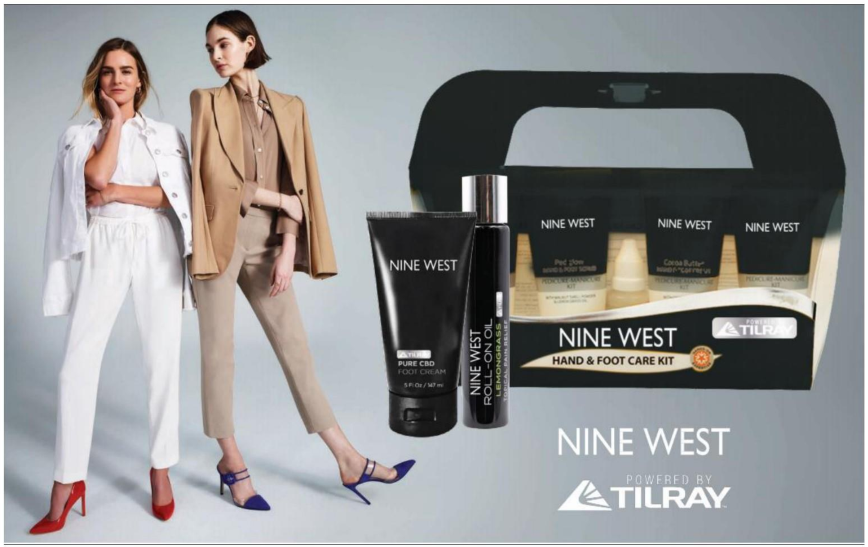
Figure 120 Nine West Products Powered By Tilray



Source: Cowen and Company; Sourcingjournal.com

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Tilray will also gain exposure to ABG's 150MM followers through its micro-influencer network, Winston. Tilray will have the ability to display its name on ABG cannabis products. Tilray will initially pay ABG $100MM and up to $250MM in cash in stock. In return ABG will pay TLRY 49% of revenues from any cannabis products with any ABG brand name, with a minimum of $10MM/year for 10 years, essentially guaranteeing TLRY will receive a return on its initial $100MM investment. This type of deal opens the door for CBD products to partner with IP ownership to expand brands and CBD use partnerships.

DSW And Green Growth Brands

Green Growth Brands' CBD infused Seventh Sense products, including foot creams and muscle balms, will be sold at 96 DSW stores nationwide out of DSW's 500-store base. As the sale of CBD wellness products become widely acceptable and stigma around once illegal products subsides, opportunity should increase to move into other nationwide retailers. Under our coverage universe, Dick's Sporting Goods may have the potential to offer wellness products containing CBD. DKS has a total of 864 stores nationwide. If DKS were to offer products in a similar percentage of stores as DSW, this would provide 166 incremental distribution points for CBD wellness products.

We Would Expect Starbucks To Be First Under Our Active Coverage To Pilot CBD Oil, Though Not In Near Term Plan (Charles)

Under our active coverage, we would categorize Starbucks as the most forward thinking with beverage innovation relative to Dunkin', Tim Hortons and McDonald's McCafe. Starbucks has launched matcha and nitro cold brew on a widespread basis in recent years, among other wellness-based offerings. During an interview with CNBC last month, Starbucks CEO Kevin Johnson cited no plans to introduce CBD-based beverages in the near term, but did not dismiss the notion of ultimately piloting the ingredient.

Despite early traction with craft/independent coffee shops, regulators in several states recently banned CBD as an additive. The dynamics are fluid, likely delaying adoption from major coffee players like Starbucks in the near term. That said, we acknowledge a longer-term opportunity if coffee shops are able to properly measure and disclose the CBD levels in their coffee, as bottled CBD beverages that disclose CBD oil levels in packaging are not restricted under the current ban.

Should the regulation of CBD oil as an additive to food/beverage change or craft/independent coffee shops find a way to comply with the existing regulation, we could envision Starbucks ultimately piloting the ingredient. We believe Starbucks would need to better understand the science behind the ingredient, in addition to the standard evaluation of any new SKU around supply chain availability as well as meeting Starbucks' high speed of service standards. Furthermore, given Starbucks' heavy reliance on the drive-thru business at more than 50% of sales and 80%+ of ongoing development, SBUX would need to gain clarity around potential liability this entails around selling cannabis-infused beverages before introduction. We note in 2010, Starbucks launched an Evenings program that sold beer and wine inside of participating restaurants. The initiative ultimately scaled to over 400 locations before the program was terminated in 2017.

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Regulatory Considerations For CBD (Assaraf – Washington Research Group)

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2018 Farm Bill

The Agricultural Improvement Act of 2018 (also known as the 2018 Farm Bill) was signed into law by President Donald Trump on Dec. 20, 2018. The main CBD-related changes in the law are that it: 1) declassifies industrial hemp as a Schedule I substance under the Controlled Substances Act, 2) shifts regulatory authority over hemp from the Drug Enforcement Administration to the Department of Agriculture, and 3) provides autonomy for states to regulate the industry.

However, the 2018 Farm bill does not change the FDA's oversight authority over CBD products intended for human consumption. The statutory language emphasizes that "nothing in this subtitle shall affect or modify … the authority of the Commissioner of Food and Drugs … under the Federal Food, Drug, and Cosmetic Act [FDCA] … to promulgate Federal regulations and guidelines that relate to the production of hemp."

FDA Implications

FDA Commissioner Scott Gottlieb issued a statement and FAQ immediately following the signing of the 2018 Farm Bill, essentially reminding CBD manufacturers of FDA's continued regulatory authority over CBD products.

On the positive side, Gottlieb indicated that the FDA is open to engaging with industry players early to clarify uncertainty and to help develop a clear and consistent pathway for bringing legal CBD products to market. To that end, the FDA intends to hold a public meeting "in the near future" to gather stakeholder input on CBD products, including the perspectives of consumers and manufacturers. The FDA will use this meeting to inform an "efficient regulatory framework for allowing product developers that meet the requirements under [FDA] authorities to lawfully market these types of products."

On the other hand, Commissioner Gottlieb expressed concern over the proliferation of CBD products making drug claims. According to Gottlieb, "the FDA requires a cannabis product (hemp-derived or otherwise) that is marketed with a claim of therapeutic benefit, or with any other disease claim, to be approved by the FDA for its intended use before it may be introduced into interstate commerce. This is the same standard to which we hold any product marketed as a drug for human or animal use. Cannabis and cannabis-derived products claiming in their marketing and promotional materials that they're intended for use in the diagnosis, cure, mitigation, treatment, or prevention of diseases (such as cancer, Alzheimer's disease, psychiatric disorders and diabetes) are considered new drugs or new animal drugs and must go through the FDA drug approval process for human or animal use before they are marketed in the U.S."

Even before the passage of the Farm Bill, the FDA has kept a close watch on certain health claims being made by CBD manufacturers. A simple web search on the FDA's website turns up dozens of previous warning letters to CBD manufacturers making such claims (see below for links to FDA warning letters). According to Gottlieb, "the FDA will continue to evaluate and take action against products that are being unlawfully marketed and create risks for consumers."

In his statement, Gottlieb also presented the following warning for CBD additives to food and beverages:

"Additionally, it's unlawful under the FD&C Act to introduce food containing added CBD or THC into interstate commerce, or to market CBD or THC products as, or in, dietary

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supplements, regardless of whether the substances are hemp-derived. This is because both CBD and THC are active ingredients in FDA-approved drugs and were the subject of substantial clinical investigations before they were marketed as foods or dietary supplements. Under the FD&C Act, it's illegal to introduce drug ingredients like these into the food supply, or to market them as dietary supplements. This is a requirement that we apply across the board to food products that contain substances that are active ingredients in any drug."

In response to Gottlieb's statement, Sens. Ron Wyden (D-Ore.) and Jeff Merkley (D-Ore.) sent a letter to the FDA on Jan. 15 urging the agency to update federal regulations governing the use and interstate sale of certain hemp-derived ingredients in food, beverages or dietary supplements. The two senators, who authored the 2018 Farm Bill's Hemp Farming Act provision, indicated that it was "Congress' intent to ensure that both U.S. producers and consumers have access to a full range of hemp-derived products, including hemp-derived cannabinoids." They requested feedback from FDA within 30 days on the agency's specific plans regarding implementation of the 2018 Farm Bill.

Sample Of FDA Warning Letters On CBD Products:

https://www.fda.gov/ICECI/EnforcementActions/WarningLetters/ucm616278.htm

https://www.fda.gov/ICECI/EnforcementActions/WarningLetters/2017/ucm583192.htm

https://www.fda.gov/ICECI/EnforcementActions/WarningLetters/2017/ucm583197.htm

Notable State-Level Events

California

California has historically been more aligned with the FDA's stance that industrial hemp-derived CBD cannot be used in food or dietary supplements. However, that state does permit the sale of food products with cannabis-derived CBD in licensed dispensaries. The Food and Drug Branch of California Department of Public Health (CDPH) issued an updated FAQ on CBD in food products in July 2018 indicating that its definition of "food" does not include cannabis products like edibles, which are legal in California. CDPH also technically bans the sale of CBD oil outside of licensed cannabis retailers, though it isn't always enforced.

Separately, California Governor Jerry Brown signed a law in late September 2018 (Assembly Bill 2914) that bans the addition of CBD or THC to any cocktail at a public establishment. The new law "prohibit[s] an alcoholic beverage licensee from, at its licensed premises, selling, offering, or providing cannabis or cannabis products, including an alcoholic beverage that contains cannabis or cannabis products, and would provide that no alcoholic beverage shall be manufactured, sold, or offered for sale if it contains tetrahydrocannabinol or cannabinoids, regardless of source."

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Maine

Despite being one of 10 states to legalize marijuana for recreational use, health officials in Maine recently ordered businesses in the state to remove CBD-infused edibles from store shelves according to an article in the *Portland Press Herald.* Similar to California, the Maine Department of Health and Human Services appears to be following the FDA's lead in determining that CBD is an unapproved food additive.

State health inspectors in Maine have reportedly told businesses to remove "all foods, tinctures and capsules" containing CBD from their shelves; however, business owners can still sell "CBD products that can be smoked, vaped, worn as a patch or applied as a lotion, and all medical marijuana patients can still buy oral CBDs from licensed caregivers or dispensaries."

New York

In response to the 2018 Farm Bill, the New York State Department of Agriculture and Markets issued a FAQ dated Dec. 18, 2018 on the manufacture and sale of hemp-derived CBD products. The department indicates that its current guidance is subject to change and that it will likely be issuing additional regulations as the industry evolves.

The FAQ suggests that New York will allow the sale of CBD products sold as a topical or dietary supplement (pill or tincture), the latter of which runs counter to FDA's current position. However, the guidance appears to restrict CBD products for vaping/inhalation.

Additionally, New York will require licensure and prior written approval to produce and sell certain food and beverages under the New York State Industrial Hemp Research Pilot Program. Licensees under the program can sell products that are "(1) listed in your Research Plan and (2) produced in a facility meeting dietary-supplement GMP standards and (3) properly labeled and packaged for sale pursuant to FDA regulations for dietary supplements, and (4) in compliance with all provisions of the Research Partner Agreement."

Otherwise, New York will restrict the manufacture and sale of ready-to-eat food and beverage products with added CBD infusions or CBD extracts and lists products such as "CBD chocolate syrup, CBD soda, and CBD-infused frosting drizzled cookies." In early February, the *New York Times* reported that the New York Department of Health and Mental Hygiene was beginning to more aggressively enforce this restriction in New York City restaurants and eateries.

North Carolina

The North Carolina Department of Agriculture and Consumer Services recently announced its intent to issue warning letters to manufacturers and retailers who sell products containing CBD oil in the state. According to a Feb 8 press release, North Carolina will follow current federal laws, meaning that "CBD cannot legally be added to any human food or animal feed that is for sale," as CBD is the active ingredient in an FDA-approved therapy and cannot be considered a dietary supplement.

North Carolina intends to take an "educate before regulate stance with industry," according to the release. However, the state will "reserve the right to be more assertive" to ensure consumer health and safety, likely meaning product embargoes and seizures.

Ohio

State and local health officials in Ohio have also begun cracking down on retailers selling CBD products, according to a recent report from the *Cincinnati Enquirer*. The Ohio Department of Agriculture is reportedly ordering the “embargo” of products containing CBD, which has forced some businesses to remove products from store shelves.

Like most states, Ohio has not yet set up regulations for hemp, which the 2018 Farm Bill requires from each state before the manufacture and sale of certain hemp-derived products. In the meantime, CBD sales are technically limited to one of the Ohio’s 56 licensed dispensaries, under the state’s medical marijuana program.

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Global CBD Landscape (Azer)

International Drug Conventions (UN)

There are three international conventions that are core to the drug control system: (1) 1961 Single Convention on Narcotic Drugs, (2) 1971 Single Convention on Psychotropic Substances and (3) 1988 Single Convention Against Illicit Traffic in Narcotic Drugs and Psychoactive Substances.

Under the 1961 Convention, cannabis extracts and tinctures are currently classified as Schedule I substances based on high abuse and dependence potential. Resin and herbal cannabis are classified as Schedule IV, the most prohibitive category, including dangerous substances that have little to no medical benefits. THC is classified as a Schedule II substance in the 1971 Convention. CBD does not currently have its own scheduled class in the Conventions. Based on recent recommendations from the World Health Organization (WHO), these classifications are likely to change in the short term.

Although the cannabis plant, as a whole, is scheduled under the conventions, there is not a distinct separation between marijuana and hemp at the moment. However, there is an exemption in the conventions for industrial uses of hemp, permitted there is no potential for abuse. The language in the treaties is vague and has allowed member states to interpret the conventions in a way that permits the use of hemp to fit their national legislation. This is a principle based on the practice of “good faith.”

Cannabis Recommendations (WHO)

Beginning in November 2017, CBD was subject to its first pre-critical review conducted by the WHO at the 39th meeting of the Expert Committee on Drug Dependence (ECDD). Following the critical review of CBD at the ECDD’s 40th meeting, it was recommended that “pure CBD should not be scheduled in the International Drug Control Conventions.” Further clarifications were recently added outlining that CBD preparations containing less than 0.2% THC should be removed from the drug conventions. The clarification does not specifically mention the difference between CBD preparations derived from hemp or marijuana. This outcome is based on expert consultations that found that CBD has no potential for abuse or dependence. CBD will be the first cannabinoid not controlled under international law.

The WHO also recommended that THC be removed from the 1971 Convention and listed under Schedule I. Similarly, it recommended that herbal cannabis and resin remain under Schedule I and removed from Schedule IV of the 1961 Convention. Extracts and tinctures were also recommended to be removed from Schedule I. This marks a historic decision because this was the first time cannabis has ever been subject to a critical review conducted by the WHO.

In March 2019, the Commission on Narcotic Drugs, comprised of 53 countries, will vote on the WHO’s recommendations to schedule substances. A simple majority is required. However, it is uncertain whether the member states will vote on cannabis and its derivatives since the WHO delayed the announcement of the recommendation by two months. This may postpone the vote until 2020.

When the vote is passed to remove pure CBD and CBD preparations, countries that permit the use of pure CBD and preparations of CBD will not be in violation of any international treaties. Although countries would no longer be obliged to enforce any control on CBD, national jurisdictions may still implement measures to regulate or prohibit CBD use.

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European Landscape

European Parliament Resolution

In February 2019, the European Parliament passed a significant resolution to create harmonized policies and standardized practices for medical cannabis products in the EU. The Parliament stressed the importance of conducting clinical trials, which requires a formal assessment of socio-economic and regulatory barriers that have prohibited access to research in the past. This is not a legislative, binding resolution; the European Commission will need to consider a regulatory framework that permits access and availability to cannabis medicine, therapies and scientific studies.

The European Parliament explicitly stated support for the WHO's recommendations to institutionalize the medical and scientific uses of cannabis. Having these two international institutions aligned on standardizing medical cannabis policies will facilitate support for interstate agreements and trade, and paves way for rapid legislative change and growth.

EU Standards And Regulations

There is not a supranational regulatory framework for cannabis in the EU. However, general standards, such as Good Manufacturing Practice (GMP), Good Agricultural and Collection Practice and Good Distribution Practice, are now significant for cannabis compliance. Licenses and authorization must be obtained for certification. This is especially required for pharmaceutical grade cannabis, which is why many Canadian LPs can export to Europe and made investments to build GMP-certified facilities. Although not necessary for non-prescribed cannabis, products with GMP-certification have trusted quality recognition across the EU.

In the EU, the legal limit for THC content is less than 0.2%, in comparison to North America where it is less than 0.3% THC. There are some disparities across the continent with higher margins in Italy (up to 0.6%) and various import requirements country to country. Outside of the EU, Switzerland permits up to 1% THC content, which is treated as a tobacco substitute.

EU Novel Food

Recently, CBD has been added to the European Union's (EU) Novel Food Catalogue. Foodstuff may be supplements, ingredients or other substance forms. A "novel" food is a product not previously consumed in the EU, to a significant degree, prior to May 15, 1997, such as for example, foods that enter the market through new technology or agricultural products normally consumed and grown outside of the EU (e.g. chia seeds, vitamin K, UV treated food).

Amendments to the Catalogue occur frequently and provide a regulatory framework for EU Member States (MS) to follow. Some MS (i.e. UK, France, Germany, Italy, and Holland) requested to update the catalogue with CBD and hemp-derived products. The European Food Safety Authority (EFSA) is now conducting a risk assessment for CBD. This categorization includes pure CBD extracts and products that contain CBD extracts. The EFSA's assessment is limited to a daily intake of 130 milligrams. The outcome of the review is expected in March 2019. By October 2019, the European Commission will release a draft act to authorize CBD in the updated Catalogue.

While the EFSA assesses CBD, some countries have already banned the sale of CBD and removed product from the shelves (e.g. France, Austria). MS may have their national food or health agencies provide further guidance for CBD products and preparations. Obtaining authorization for CBD and hemp-derived products (e.g. tinctures, edibles,

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beverages) will be imperative. This regulatory framework does not affect skincare, cosmetics or topicals with CBD or hemp ingredients.

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Europe

UK

The UK legalized prescription based medical cannabis in November 2018. Medical cannabis treatments that are advertised with specific medical claims must obtain authorization from the Medicines and Healthcare Regulatory Agency (MHRA). Currently, licensed medical cannabis products are Sativex, Dronabinol and Nabilone. Epidiolex, medical grade pure CBD produced by British pharmaceutical company, GW Pharmaceuticals, is undergoing the licensing process. “Unlicensed” products may be able to be obtained, such as products from Tilray or Bedrocan, under special circumstances which are unmet by other licensed products. Canopy and Aurora announced at the beginning of 2019 that it plans to export to the UK later this year. Despite changes in legality, the number of patients who have been prescribed medical cannabis treatments is quite limited.

While pharmaceutical grade products are difficult to obtain, CBD products are widely available across the UK. Pure CBD is not a controlled substance under the Misuse of Drugs Act 1971. Therefore, as long as CBD products are not authorized by the MHRA, medical claims on labeling and packaging cannot be made. There are also no enforced regulations for testing or packaging. These loopholes in the legislation have led to an increasing number of CBD products marketed as health supplements or wellness products. Due to the growing trend, CBD products have been widely available across the UK, primarily sold in boutique shops, cafes, health stores and online. Holland and Barrett, a health foods store, was the first High Street store to carry CBD products in 2017. Other mainstream outlets now sell hemp-based beauty products, CBD tinctures, edibles, vapes, e-liquids and other forms of the substance. A handful of restaurants also offer CBD cocktails or hot drinks, and the number of kitchens and chefs using cannabis-based products is increasing across the country.

However, in January 2019, the UK Food Standards Agency (FSA) announced that it plans to conduct an investigation of CBD products for consumer safety. It is expected that the FSA will later provide requirements for authorization. This may take up to 18 months. Although enforcement is unclear at the moment, some CBD products have already been removed from the shelves. Since the FSA’s assessment does not apply to cosmetics or skincare products with CBD, some CBD companies have expressed interest in launching beauty products now.

A license is required in order to cultivate hemp in the UK. There are restrictions on where the farm can be located that must be approved by the Home Office. Many companies still struggle to secure banking and payment options for their hemp-related businesses. A lobbying group, the British Hemp Association, was formed to educate and push for legislative changes, such as whole plant processing and financial support. Due to barriers of entry, the number of hemp farmlands is small, around 810 hectares.

Italy

Medical cannabis has been legal in Italy since 2013, yet access and supply remained restricted for years. In 2017, the Military Chemical and Pharmaceutical Plant (MCPP) received a license to cultivate medical cannabis, which supplemented the imported supply from the Netherlands (i.e. from Bedrocan). The MCPP cultivates a medical cannabis product, FM2, that contains 5-8% THC and 7.5-12% CBD. A high THC product (FM1) and a CBD product (FM0) will soon be available. The MCPP only produces 100-150

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kg per year, which has led to a shortage of supply. In 2018, an import license was granted to Canadian licensed producer (LP), Aurora, for 100 kg of medical cannabis per year to help meet the demand.

Italy has a rich history of hemp cultivation and it used to be one of the main producers in the world prior to prohibition of the plant. The market opened up in 2016 when the government announced that a license to cultivate hemp for industrial, food, cosmetic and energy purposes was no longer required. Whereas the rest of the EU requires THC content to be below 0.2%, Italy permits a margin of up to 0.6%.

Based on the license exemption, many companies started producing and selling high CBD, low THC referred to as “cannabis light.” Cannabis light products must state that the product is not for human consumption; however, once a person purchases the product the use is essentially up to their own discretion. These products are legally sold and branded as “collectors’ items.” Since it is a “collectors’ item,” imported “cannabis light” products are not taxed. However, it is necessary to have proper test and analytics when crossing the border to guarantee the product passes customs.

One of the first “cannabis light” companies, EasyJoint Project, launched in 2017 and is sold in hemp specialist shops. There are now around 1,000 e-commerce sites and other retail stores that sell CBD oil, capsules, CBD for pets, dried flower, vapes and cosmetics. Legally, the Health Ministry must approve products, yet this is not frequently enforced.

Foreign companies have invested in land over the last couple of years, including public Canadian companies Wayland, LGC Capital, Canopy and CROP. In 2018, Wayland entered a JV with CBD Italian Factory S.S. with plans to supply the local market with CBD for medical, therapeutic and veterinary purposes. LGC Capital entered an agreement with EasyJoint to acquire 47% of the company to gain access to the local “cannabis light” companies’ 415 retail outlets and 11 branded stores. In February 2019, Canopy made an investment in Italian organic hemp producer and CBD extractor, Canapar Corp. CROP, a Canadian holdings company, acquired 30% of Italian company, Zhemplar, to cultivate and extract low THC, high CBD products, under a white label brand, Tiffany CBD and Hempire Italia. The company also has exclusive rights with Yield Growth Corp to over 55 wellness products that can be infused with CBD.

Switzerland

Switzerland is recognized for its progressive drug policies and evidence based approaches. Medical cannabis has been regulated since 2008 and continued to open with regulatory changes in 2017. The number of patients is relatively small, at around 3,000 people. Prior to June 2018, it was not possible to obtain pharmaceutical grade pure CBD for medical purposes. That changed once the Food and Drug Administration in the U.S. approved Epidiolex; subsequently, the Swiss law changed, too. Pharmacies can now prepare magistral formulas for CBD for patients who meet certain conditions

Although cannabis is controlled under the Narcotics Act, CBD is not included in that legislation. The country permits 1% THC to be cultivated, produced and used, which is regulated as a tobacco substitute. These products (e.g. pre-rolled joints, dried flower, and cannabis cigarettes) are regulated under the Tobacco Ordinance and can be purchased in supermarkets, specialty shops, kiosks and cafes. The first cannabis cigarette was available for purchase in 2017. These products are predominantly consumed by affluent businesspeople during breaks at work or the end of the day.

The Federal Office of Public Health (FOPH) provides regulatory oversight for tobacco and CBD products. Registration with the FOPH is required for tobacco substitutes to

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guarantee quality control and compliance. However, this is practiced under "self-supervision" requiring the company to register products prior to market placement. In recent years, the FOPH has been removing CBD products from storefronts due to lack of self-compliance, transparency and false claims.

Swiss law also permits CBD to be used in pure or synthesized form for cosmetic products. The Federal Food Safety and Veterinary Office regulates cosmetic products as well as products that contain hemp-derived ingredients and CBD liquids for e-cigarettes. None of these products can make any pharmacological claims. The Federal Office for Agriculture regulates hemp seeds, oil, fiber, etc, and seeds must be certified and listed under the European Union's Common Catalogue of Varieties.

From 2017 to 2018 there was an influx in the number of cannabis companies in Switzerland, leveling off from around 500 companies to around 100 companies. While many are supplying the local market, a number of companies are exploring and exporting to neighboring markets (e.g. Italy, France, Germany). Beyond their geographical advantage, Switzerland also is recognized for its quality and sophisticated pharmaceutical sector.

At the end of 2018, LGC Capital entered a partnership with Viridi, a Swiss cultivator, processor and distributor of high-CBD products. Wayland acquired Haxon AG, a Swiss hemp producer of 1% THC products. Creso Pharma Limited entered into an agreement with Hempmate Zurich AG for further expansion into the European CBD market.

France

Medical cannabis has been legal in France since 2013 and Marinol has been the only product prescribed. In 2018, the ANSM launched an investigation to explore scientific data for therapeutic uses of the plants, type of eligible conditions and consider regulatory frameworks in other legal medical markets. An initial recommendation found that legal medical cannabis should be authorized and final recommendations are expected to be released by September 2019. Aurora has already announced plans to expand into France by investing in infrastructure prior to the market opening.

France is the leading hemp cultivator and processor in Europe, and the global leader in hemp seed production. In 2016, there was a total of 33,000 hectares growing hemp. Stalks and seeds can be processed, yet buds cannot be legally processed, unless for medical purposes. Synthetics are permitted for use. The country permits the cultivation of 20 strains, approved by the EU. There is one company, Hemp-it, that has received a license to grow different varieties.

Despite its leading position in hemp production, the French government has cracked down on the sale of hemp-derived products and CBD sold in stores, cafes and seed shops, as a response to public health and safety. Over the past few months, the Ministry of Social Affairs and Health and National Agency for the Safety of Medicines and Health products (ANSM) have been conducting a review on the uses and authorizations required for CBD. There are a number of CBD and hemp-derived skincare and cosmetic companies that sell lotions, cremes, pain balms, beard oils, etc. France's extensive history in the cosmetics industry positions the country well for CBD skincare.

Latin American Landscape

Chile

Medical cannabis has been legal in Chile since 2017 following a pilot program conducting scientific research that began in 2014. A consortium of non-for-profit organizations, most notably the Daya Foundation, ran this program. They treated over 1,000 patients in the first year of operations. Following the regulatory change in 2017, imported medical cannabis products were available from pharmacies.

Product authorization and cultivation licenses are required to grow and distribute medical cannabis products in country. The Agricultural and Livestock Service of Chile governs these licenses. Chile also permits home-grow, which is popular in the country and the region.

Dayacann (part of Daya Foundation) was the first company to receive a license to cultivate medical cannabis in Chile. Khiron Life Sciences entered an MOU with Dayacann in January 2019 to further expand into the Chilean market of around 1.8 million patients. In 2018, Tilray entered a partnership with Alef Biotechnology (now Tilray Latin America) for distribution in Chile and Brazil, and recently received a license to cultivate and process medical cannabis products. Two Tilray products, T100 and TC100 were approved for prescription in 2016. Canopy Growth's Spectrum Cannabis Chile is also operating in Santiago focused on medical research and patient outreach.

Hemp production has been part of Chile's history, dating back to the 1500s, and has remained legal. There have been provisions in Chilean law to differentiate between cannabis and hemp. Despite its legality, there are not many hemp farms in the country. Chile hosts Expoweed, a hemp trade show, that is Latin America's biggest hemp event. With the land and history, the country has positioned itself for growth as demand for hemp-based products increase.

Colombia

Colombia is becoming a Latin American hub for cannabis cultivation due to favorable climate and cost of production. The country permits exports of extracts only, with the exception of small quantities of dried flower that are exported for scientific reasons. Only permitting extracts for export is strategic to have traceability from seed to harvest and production. This is in order to curb organized crime and money laundering related to the country's history of drug trafficking. There have been trade agreements established between the EU and Canada in order to facilitate exportation of extracts.

The governments passed legislation for medical use in 2015, which was formally implemented in 2016, and a framework for medical cannabis cultivation was established in 2017. The country issues four types of licenses: 1. Cannabis Seeds (for scientific purposes) 2. Cultivation (psychoactive cannabis) 3. Manufacturing (cannabis derivatives) 4. Cultivation (non-psychoactive cannabis). Another license is required to export. Clever Leaves became the first Colombian company in February 2019 to export medical cannabis to Canada.

Many Canadian LPs have opened operations in Colombia, including Canopy, Aurora, Plena Global, Khiron Life Sciences, Blueberries Medical Corp, Pharmacielo and Wayland. Some of these companies are focused on cultivating strains for CBD. Pure Harvest Cannabis Producers recently entered a JV for land in Colombia to produce CBD from hemp and cannabis. Pharmacielo also secured a proprietary license to cultivate 10 strains, some CBD and some THC dominant. The company registered their seeds, which is now required following an amnesty period for seed genetics that ended December 31,

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2018. Organto received a license to produce high-CBD strains and Foulimed intends to cultivate 70 tones of hemp and cannabis for medical purposes. Colombia enjoys an advantageous climate for cultivating cannabis at a low cost for production, which has attracted interest from many foreign companies.

Mexico

Medical cannabis has been regulated in Mexico since 2017. This regulatory change followed a favorable Supreme Court ruling for a young girl who treated her Lennox-Gastaut syndrome with CBD oil in 2015. It is permitted to have medical cannabis products with up to 1% THC content and these products are regulated by the Health Ministry. Aurora (through their subsidiary Farmacias Magistrales) recently received a license to import medical cannabis products containing over 1% THC. Pharamacielo recently announced a JV with Mexican pharmaceutical company MINO Labs S.A. de C.V. to distribute medical cannabis domestically.

Mexico is the second largest hemp producer in Latin America. The law changed in 2017 to permit the cultivation and processing of industrial hemp. In November 2018, the government released a list of 38 OTC products – 21 food supplements, 9 cosmetics, 6 edibles or beverages, 2 raw material – that have been approved for sale in the country. Seven companies received authorization for these products, which includes 2 American, 4 Mexican and 1 Spanish company. These products must contain no more than 1% THC. Products can be purchased through retail stores and e-commerce sites. The regulatory agency authorizing these products is the Mexican Federal Commission for Protection Against Sanitary Risks.

Mexico has announced plans to legalize cannabis for adult-use purposes in 2019, which would significantly change the shape of the market opportunities. The country would become the third in the world to implement a nationwide policy to legalize cannabis for all purposes. In the proposed legislation there would include six types of cultivation licenses – 1. Personal, 2. Scientific, 3. Therapeutic, 4. Recreational, 5. Pharmaceutical and 6. Industrial – five manufacturing licenses – 1. Personal, 2. Therapeutic, 3. Pharmaceutical, 4. Recreational and 5. Industrial – and three distribution licenses – 1. Therapeutic, 2. Pharmaceutical and 3. Industrial. These considerations are still pending. While this will bring many changes to the regulatory framework, home-grow has been legal for personal use since 2015.

Former President Vicente Fox has become a public figure in the cannabis industry by accepting a position at Khiron Life Sciences, one of the leading Latin American producers. The company launched a nutraceutical line, Kuida Life Mexico S.A., at the end of 2018. They receive approval to import CBD-based supplement products for sleep, digestion and muscle recovery. Khiron also entered a JV with American edibles company Dixie Brands for distribution in the Latin American market.

Uruguay

Uruguay was the first country in the world to legalize cannabis for all purposes nationwide in 2017. However, medical cannabis has been regulated in the country since 2013 and an industrial hemp program has been implemented since 2010. The Institution of Regulation and Control of Cannabis provides regulatory oversight for the medical market.

There are two licensed producers in Uruguay, and thus, the market has not opened to many foreign entities. This has led to a shortage of supply for the domestic market. Addressing supply issues, the country announced plans to rework the framework to permit more imports and opened applications for up to five more licenses.

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The current licensed companies have already entered agreements with publicly traded cannabis companies. In 2018, Aurora acquired Uruguayan fully licensed ICC Labs Inc. (ICC) that operates a GMP-certified lab facility, indoor and outdoor grow operations and distributes CBD-based products under the brand BIDIOL. In January 2019, Khiron acquired NettaGrowth International Inc., which gives the company access to one of the two currently held medical cannabis licenses in Uruguay.

The amount of land cultivating hemp increased since 2016 but it not at the commercial scale yet. There are intentions to grow hemp in order to extract CBD for pharmaceutical and nutraceutical uses. Although cultivation of CBD with less than 1% THC is permitted, it is relatively difficult to access CBD products in Uruguay at the moment. In 2018, Auxly Cannabis Group acquired Uruguayan hemp cultivator and extractor Inverell S.A. with plans to develop and distribute CBD products.

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Additional Applications / Implications (Nadeau & Osborne)

Epilepsy & Psychiatric Conditions (Nadeau)

For companies willing to invest in research and manufacturing, the development of FDA-approved cannabinoid-based drugs provides another path to market. GW's Epidiolex (highly potent, pure CBD) was approved by the FDA in 2018, and several other companies are dedicating resources to conducting the pre-clinical and clinical research necessary to follow in GW's footsteps. These companies are developing cannabinoids that differ by route of administration (oral capsule, oromucosal spray, sublingual pill, aerosol, topical cream, etc), formulation (level of purification, bioavailability, concentration), and dosing strategy (single agent or in combination). Below we summarize the clinical trial data from GW's Epidiolex in epilepsy and psychiatric indications, and Zynerba's transdermal CBD gel ZYN002 in Fragile X syndrome.

GW conducted a broad Phase III program for Epidiolex in epilepsy, consisting of two Phase III trials in Dravet, two Phase III trials in Lennox-Gastaut syndrome (LGS), a Phase III trial in tuberous sclerosis complex, and a Phase II/III trial in infantile spasms. The first three Phase III trials (one in Dravet and two in LGS) supported an NDA submission, leading to FDA approval in June 2018.

The Phase III efficacy portion of the first Dravet trial randomized 120 patients to either Epidiolex (20 mg/kg/day, n=61), or placebo (n=59). Epidiolex was added to background anti-epileptic drugs (AEDs). On average, patients were taking ~3 AEDS after previously having failed 4 or more. The average age of trial participants was 10 years and 30% of patients were less than 6 years of age. Patients entered the study with a median baseline convulsive seizure frequency of 13/month. The primary endpoint was the % change in monthly frequency of convulsive seizures during the 14-week treatment period compared with the 4-week baseline between Epidiolex and placebo.

On the trial's primary endpoint, Epidiolex achieved a highly statistically significant median reduction in monthly convulsive seizures of 39% compared with a reduction in placebo patients of 13% (p=0.01). The difference between Epidiolex and placebo emerged during the first month of treatment and was maintained through the entirety of the treatment period. Nine pre-specified sensitivity analyses of the primary endpoint confirmed the robustness of the primary endpoint result. These analyses dealt with statistical elements such as the data's normality, assumptions about discontinuations, and the time period over which the data were analyzed. A number of secondary endpoints were also assessed (responder analysis, seizure types, global impression of change).

Full data were presented at AES 2016. This presentation disclosed that during the maintenance period the reduction in seizure frequency was 41% for Epidiolex vs. 16% for placebo, p=0.0052. The median reduction in total seizures was 29% for Epidiolex vs. 9% for placebo during the treatment period, and 37% for Epidiolex vs. 10% for placebo during the maintenance period. There was a clear separation between Epidiolex and placebo in a continuous response analysis of convulsive seizures across all reductions in convulsive seizure frequency. In particular 43% of Epidiolex patients vs. 27% of patients taking placebo had at least a 50% reduction in convulsive seizures. 62% of Epidiolex patients vs. 35% of placebo patients were rated slightly improved, much improved, or very much improved on the Caregiver Global Impression of Change (CGIC). It was noted that three Epidiolex and no placebo patients achieved convulsive and total seizure freedom during the treatment period. While the poster did not discuss the impact of concomitant clobazam on efficacy, it did note that "the effect of concomitant AEDs on efficacy will be explored in future pooled analyses."

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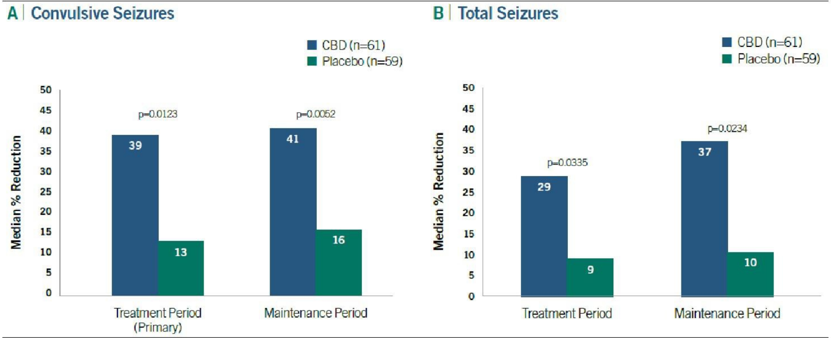
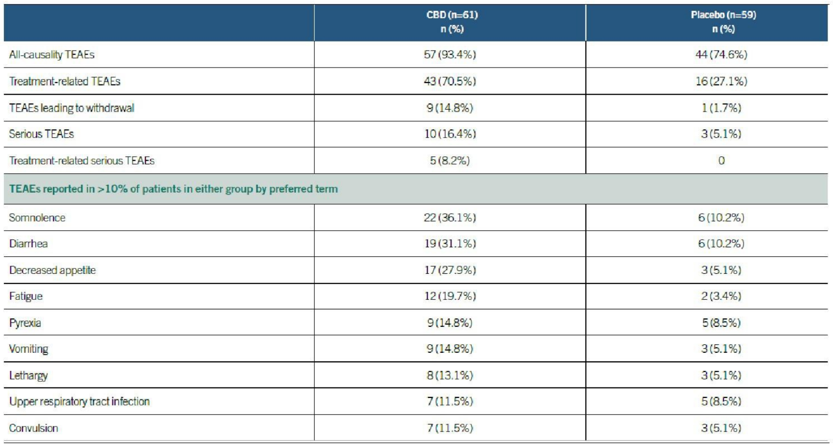
Figure 121 Efficacy Results From Epidiolex's First Phase III Trial In Dravet Syndrome



Source: GW Pharma, AES 2016

The most common adverse events were reported to be somnolence (36% in patients on Epidiolex vs. 10% in placebo patients), diarrhea (31% vs. 10%), decreased appetite (28% vs. 5%), fatigue (20% vs. 3%), pyrexia (15% vs. 9%), and vomiting (15% vs. 5%). Importantly, there was no difference in the number of patients who experienced status epilepticus between Epidiolex (n=4) and placebo (n=3). Increases in ALT or AST (>3x ULN) occurred in 12 CBD and 1 placebo patient, all of whom were on concomitant valproic acid. All elevations resolved. SAEs were seen in 10 Epidiolex patients vs. three on placebo. Eight patients on Epidiolex discontinued treatment compared with one patient on placebo, due to adverse events similar to those above, including three due to ALT/AST elevations.

Figure 122 Safety Data From Epidiolex's First Phase III Trial In Dravet Syndrome



	CBD (n=61) n (%)	Placebo (n=59) n (%)
All-causality TEAEs	57 (93.4%)	44 (74.6%)
Treatment-related TEAEs	43 (70.5%)	16 (27.1%)
TEAEs leading to withdrawal	9 (14.8%)	1 (1.7%)
Serious TEAEs	10 (16.4%)	3 (5.1%)
Treatment-related serious TEAEs	5 (8.2%)	0
TEAEs reported in >10% of patients in either group by preferred term		
Somnolence	22 (36.1%)	6 (10.2%)
Diarrhea	19 (31.1%)	6 (10.2%)
Decreased appetite	17 (27.9%)	3 (5.1%)
Fatigue	12 (19.7%)	2 (3.4%)
Pyrexia	9 (14.8%)	5 (8.5%)
Vomiting	9 (14.8%)	3 (5.1%)
Lethargy	8 (13.1%)	3 (5.1%)
Upper respiratory tract infection	7 (11.5%)	5 (8.5%)
Convulsion	7 (11.5%)	3 (5.1%)

Source: Cowen and Company

In 2015, GW initiated two Phase III trials in Lennox-Gastaut Syndrome. The first trial enrolled 171 patients, and the second enrolled 225. In the first LGS study, the patients were randomized 1:1 to 20mg/kg or placebo while in the second, they were randomized 1:1:1 to 20mg/kg Epidiolex, 10mg/kg Epidiolex, or placebo. The LGS trials assessed drop seizures (atonic, tonic, and tonic-clonic seizures that involve the entire body, trunk or head that led or could have led to a fall, injury, slumping in a chair or hitting the patient's

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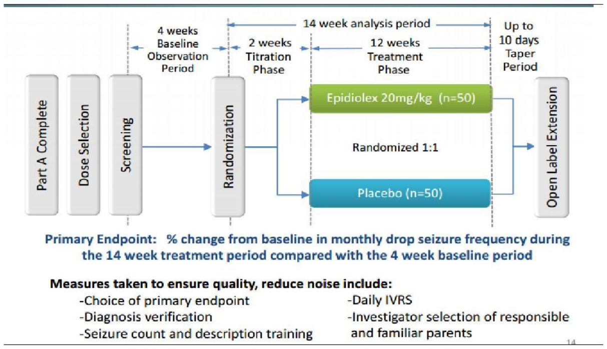
head on a surface). The primary efficacy endpoint of the trials was a comparison between Epidiolex and placebo in the percentage change in the monthly frequency of drop seizures during the 14 week treatment period (including 2 weeks of dose escalation) compared to the 4 week baseline period. Following the completion of the blinded portion of the trial, all patients were eligible to receive Epidiolex in an open label extension study.

Figure 123 1st LGS Phase 3 Trial Design

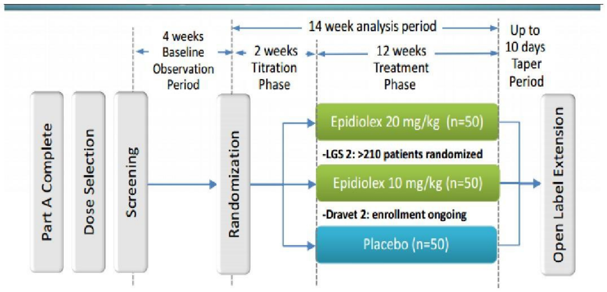

4 weeks Baseline Observation Period
14 week analysis period
2 weeks Titration Phase
12 weeks Treatment Phase
Up to 10 days Taper Period
Part A Complete
Dose Selection
Screening
Randomization
Epidiolex 20mg/kg (n=50)
Randomized 1:1
Placebo (n=50)
Open Label Extension

Primary Endpoint: % change from baseline in monthly drop seizure frequency during the 14 week treatment period compared with the 4 week baseline period

Measures taken to ensure quality, reduce noise include:
- -Choice of primary endpoint
- -Diagnosis verification
- -Seizure count and description training
- -Daily IVRS
- -Investigator selection of responsible and familiar parents

Source: GW Pharma

Figure 124 2nd LGS Phase 3 Trial Dose Ranging Design


4 weeks Baseline Observation Period
14 week analysis period
2 weeks Titration Phase
12 weeks Treatment Phase
Up to 10 days Taper Period
Part A Complete
Dose Selection
Screening
Randomization
Epidiolex 20 mg/kg (n=50)
-LGS 2: >210 patients randomized
Epidiolex 10 mg/kg (n=50)
-Dravet 2: enrollment ongoing
Placebo (n=50)
Open Label Extension

Source: GW Pharma

The first Phase III trial, patients were on an average of three AEDs, and had previously tried and failed an average of 6 other AEDs. Even on their baseline medications, the patients were experiencing a median baseline drop seizure frequency of 74 per month. The average age of patients in the trial was 15 years, although 34% were 18 years or older. On the primary endpoint, Epidiolex produced a median reduction in monthly drop seizures of 44% compared to a reduction of 22% in patients taking placebo (p=0.0135). Epidiolex reduced all seizures by 41% vs. a 14% reduction for placebo (p=0.0005), while the reduction in all seizures during the maintenance period was 45% for Epidiolex vs. 15% for placebo (p=0.0004). Similar to the Dravet trial, there was a clear separation between Epidiolex and placebo on percent reduction in drop seizure frequency across all magnitudes of reduction. In particular, 44% of Epidiolex patients had at least a 50% reduction in drop seizures, compared to 24% of patients taking placebo (p=0.0043). 58% of Epidiolex patients compared to 34% of placebo patients were rated as "slightly improved", "much improved" or "very much improved" on the Subject/Caregiver Global Impression of Change.

Epidiolex appeared to be well tolerated in the trial. 86% of patients on Epdiolex had an adverse event, compared to 69% of placebo patients. The most common adverse events were diarrhea (19% of patients on Epidiolex vs. 8% of placebo patients), somnolence (15% vs. 9%), pyrexia (13% vs. 8%), decreased appetite (13% vs. 2%) and vomiting (11% vs. 17%). Again, there was no difference in the number of patients who experienced status epilepticus between Epidiolex (n=1) and placebo (n=1). There was one death in the Epidiolex group from acute respiratory distress syndrome, but it was not considered treatment related. Increases in ALT or AST (>3xULN) occurred in 20 CBD and 1 placebo patient, all of whom were on concomitant valproic acid. All elevations resolved.

In September 2016, GW announced that Epidiolex's second Phase III pivotal trial (GWPCARE3) in the treatment of Lennox-Gastaut syndrome was also successful. On average, patients were on 3 AEDs at baseline, having previously tried and failed a mean of 7 other AEDs (median=10). The median baseline drop seizure frequency was 85 per

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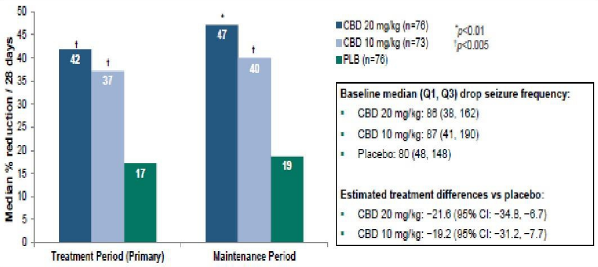
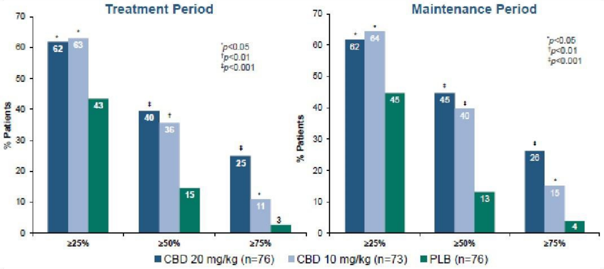
month and the average age of patients in the trial was 16 yrs, although 30% were 18 yrs or older. On the primary endpoint, 20 mg/kg Epidiolex produced a median reduction in monthly drop seizures of 42% compared to a reduction of 17% in patients taking placebo, p=0.0047. There was also a suggestion of a dose response in the data, with the lower 10 mg/kg/day dose of Epidiolex producing a median reduction in monthly drop seizures of 37%, p=0.0016. In both dose groups the difference between Epidiolex and placebo emerged during the first month of treatment and was sustained during the entire treatment period. GW disclosed that the trial's secondary endpoints, and a series of sensitivity analyses, confirmed the robustness of the results. Similar to Epidiolex's other Phase III studies, although patients on clobazam (51%) had some additional benefit, GW indicated that Epidiolex also showed efficacy in patients not on clobazam.

Figure 125 GWPCARE3: Reduction In Drop Seizures



Source: GW Pharma, AAN 2017

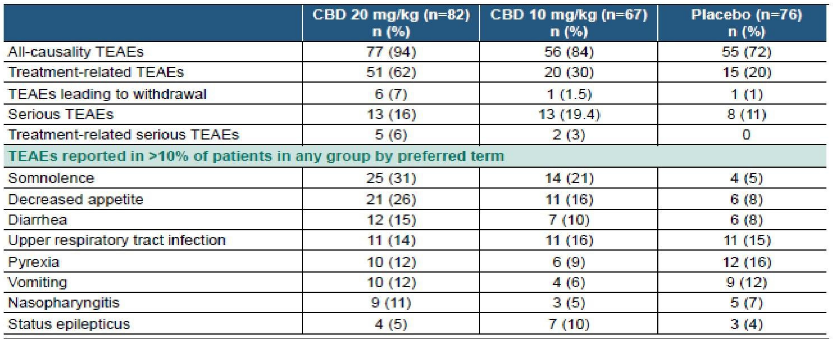
Figure 126 GWPCARE3: Responder Analysis



Source: GW Pharma, AAN 2017

Additional data were presented at AAN 2017. Included in this presentation were several of the trial's secondary endpoints and a series of sensitivity analyses. All of these confirmed the robustness of the results. For example, the proportion of patients with a >50% reduction in seizure frequency was 40% for 20 mg/kg Epidiolex (p<0.001), 36% for 10 mg/kg Epidiolex (p<0.01), and 15% for placebo. The proportion of patients with a >75% reduction in seizure frequency was 25% for 20 mg/kg Epidiolex (p<0.01), 11% for 10 mg/kg (p<0.05) Epidiolex, and 3% for placebo. The proportion of patients who achieved seizure freedom was 7% for 20 mg/kg Epidiolex, 4% for 10 mg/kg Epidiolex, and 1% for placebo.

Figure 127 GWPCARE3: Safety



	CBD 20 mg/kg (n=82) n (%)	CBD 10 mg/kg (n=67) n (%)	Placebo (n=76) n (%)
All-causality TEAEs	77 (94)	56 (84)	55 (72)
Treatment-related TEAEs	51 (62)	20 (30)	15 (20)
TEAEs leading to withdrawal	6 (7)	1 (1.5)	1 (1)
Serious TEAEs	13 (16)	13 (19.4)	8 (11)
Treatment-related serious TEAEs	5 (6)	2 (3)	0
TEAEs reported in >10% of patients in any group by preferred term			
Somnolence	25 (31)	14 (21)	4 (5)
Decreased appetite	21 (26)	11 (16)	6 (8)
Diarrhea	12 (15)	7 (10)	6 (8)
Upper respiratory tract infection	11 (14)	11 (16)	11 (15)
Pyrexia	10 (12)	6 (9)	12 (16)
Vomiting	10 (12)	4 (6)	9 (12)
Nasopharyngitis	9 (11)	3 (5)	5 (7)
Status epilepticus	4 (5)	7 (10)	3 (4)

Source: GW Pharma, AAN 2017

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Epidiolex appeared to be well tolerated in the trial. 94% of patients on 20 mg/kg Epdiolex and 84% of patients on 10 mg/kg Epidiolex had an adverse event, compared to 72% of placebo patients. 88% of 20 mg/kg patients and 89% of 10 mg/kg patients deemed their adverse events to be mild or moderate. The most common AEs on 20 mg/kg were somnolence, decreased appetite, diarrhea, upper respiratory infection, pyrexia, vomiting and nasopharyngitis. For 10mg/kg the most common AEs were somnolence, decreased appetite, upper respiratory infection, diarrhea, and status epilepticus. None of the cases of status epilepticus on 10 mg/kg were deemed treatment-related. Thirteen patients on 20 mg/kg Epidiolex had an SAE, of which five were considered treatment related; and 13 patients on 10 mg/kg Epidiolex had an SAE, of which 2 were considered treatment related, compared to 8 patients on placebo. Elevations in ALT/AST levels were observed in 11 patients in the 20mg/kg group and 2 patients in the 10mg/kg group; 10 of the 13 patients were also on valproic acid. Five Epidiolex patients withdrew due to the elevations, but none of the patients met the criteria for drug-induced liver injury. GW noted that overall 10 mg/kg seemed to be somewhat better tolerated; 6 patients on 20 mg/kg Epidiolex and 1 patient on 10 mg/kg Epidiolex discontinued treatment due to adverse events, compared with 1 patient on placebo. There were no deaths in the trial. The results of the trial were published in *NEJM* in May 2018.

Following the release of Phase III datasets from 1 Dravet and 2 LGS trials, a key area of controversy among investors (though not physicians) had been the drug-drug interaction between Epidiolex and clobazam, and in particular whether Epidiolex was effective in patients who were not also taking clobazam. This was put to rest at AES 2017 when GW presented a pooled analysis of the two Phase III LGS trials evaluating Epidiolex's efficacy with and without concomitant clobazam. Even without clobazam, Epidiolex produced solid placebo-adjusted response rates. Response was characterized in terms of "25% responders", "50% responders", and "75% responders", meaning the proportion of patients who had a 25%, 50%, or 75% decrease in seizure frequency. For patients randomized to Epidiolex's 20mg/kg dose, the placebo-adjusted 50% response rate was 22% for patients on Epidiolex without clobazam, compared to 33% for patients on Epidiolex and clobazam. We believe that investors had been hoping for a 12-15% placebo-adjusted 50% response rate for patients on Epidiolex without clobazam in order to be satisfied that Epidiolex was active without clobazam, and therefore the results cleared this bar. For patients randomized to 10 mg/kg Epidiolex, the placebo-adjusted 50% response rate was 25% for patients on Epidiolex without clobazam, compared to 27% for patients on Epidiolex with clobazam. The results for other thresholds of seizure frequency reduction were also generally solid. For 25% responders, the placebo-adjusted response rate was 9% for patients on 20 mg/kg Epidiolex without clobazam, compared to 24% for patients on 20mg/kg Epidiolex with clobazam. At the 75% responder threshold, the placebo adjusted response rate was 8% for patients on 20mg/kg Epidiolex without clobazam, compared to 30% for patients on 20mg/kg Epidiolex with clobazam. In addition to the pooled Phase III data, there were also abstracts from the compassionate use experience of Massachusetts General Hospital and the University of Alabama Birmingham. The analyses from these two institutions also concluded that Epidiolex does not need to be combined with clobazam to be effective.

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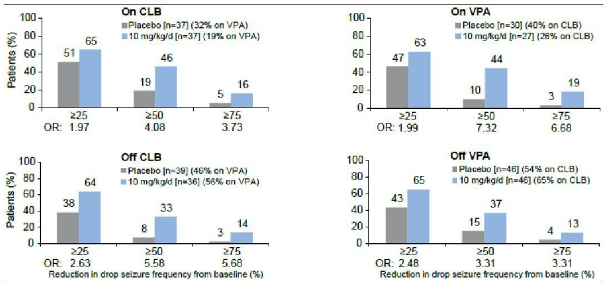
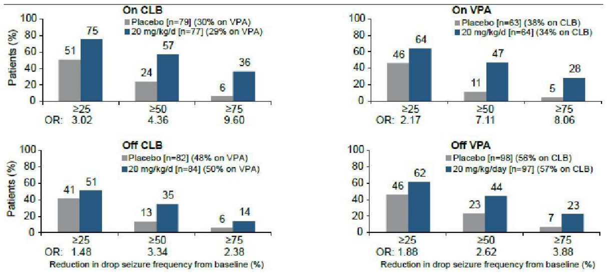
Figure 128 Pooled LGS % Seizure Reduction: 10mg/kg Epidiolex vs. Placebo



Source: GW Pharma, AES 2017

Figure 129 Pooled LGS % Seizure Reduction: 20mg/kg Epidiolex vs. Placebo



Source: GW Pharma, AES 2017

GW has also studied CBD in psychiatric indications. Results from an exploratory study of CBD (GWP42003) in schizophrenia were released in September 2015. The trial was a Phase IIa 6 week, placebo-controlled exploratory trial in 88 patients with schizophrenia refractory to first line anti-psychotic medications. To be enrolled, patients must have been treated for a minimum of four weeks on a first line anti-psychotic medication and still have a PANSS total score in excess of 60. CBD was administered as adjunct therapy on a background of antipsychotic medication. The trial did not have a primary endpoint, but rather a number of exploratory endpoints.

CBD consistently demonstrated superiority to placebo, suggesting that CBD may have substantial anti-psychotic effects. CBD produced statistically significant benefits compared to placebo on the PANSS positive sub-scale (p=0.018), the Clinical Global Impression of Severity (p=0.04) and Clinical Global Impression of Improvement (p=0.02). The proportion of responders (improvement in PANSS Total score > 20%) was higher on CBD than placebo (p=0.07), with an Odds Ratio of 2.65. Moreover, CBD trended superior to placebo (p=0.07) on sub-domains of the PANSS that were particularly relevant to cognition in people with schizophrenia. The Scale for Assessment of Negative Symptoms showed a trend in favor of CBD, and reached statistical significance in patients taking CBD together with a leading first line anti-psychotic medication. The rest of the exploratory endpoints, many of which were other scales measuring functionality and cognition in schizophrenia patients, also trended in favor of CBD.

Even in the context of schizophrenia, CBD produced a clean safety profile, with no serious adverse events and a balanced incidence of adverse events compared to placebo. The most common adverse events were diarrhea (9.3% CBD vs. 4.4% placebo), nausea (7% CBD vs. 0% placebo), headache (7% CBD vs. 8.9% placebo) and somnolence (0% CBD vs. 6.7% placebo). There were two withdrawals from the study due to treatment-related adverse events, one each for CBD and placebo.

CBD's activity in schizophrenia is supported by pre-clinical data in animal models, as well as by a recent study published in *The Journal of Clinical Investigations* (2012) which suggested CBD may be useful as either monotherapy or in combination with first line anti-psychotic agents. Nonetheless, while the p-values suggest that CBD has activity, its potency is difficult to judge without knowing the effect sizes. Therefore, additional data from this and subsequent studies will be necessary to fully understand the potential of CBD in schizophrenia. GW Pharma has indicated that it intends to pursue CBD's future development in pediatric orphan neuropsychiatric indications.

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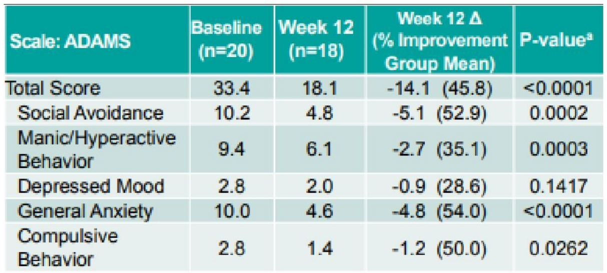
GW's platform allows it to produce chemotypes with precise concentrations of various cannabinoids, and the company is testing numerous other cannabinoids. GW's CBDV drug is in a 10 patient investigator sponsored trial in autism spectrum disorders, and a Phase II 100 patient placebo controlled trial in this indication began in December 2018. GW is also investigating CBDV for use in epilepsy, though the first clinical trial was not successful.

Zynerba studied its transdermal CBD gel ZYN002 in Fragile X syndrome in a 12 week Phase II open-label study in children and adolescents. In the trial, patients were initiated on a dose of 50mg daily with the option to titrate up to 250mg daily. The primary endpoint was the Anxiety, Depression, and Mood Scale (ADAMS) Total Score. Twenty patients were enrolled, 18 of whom completed the 12 week treatment. At 12 weeks, two patients were on 100mg and 16 were on 250mg. On the primary endpoint, subjects saw an average improvement of 14.1 points (or 45.8%) from baseline (p<0.0001) with the greatest improvements seen in social avoidance (52.9%), general anxiety (54.0%), and manic/hyperactive behavior (p=0.0003). Twelve patients continued in a long-term extension study out to 12 months of follow up. These patients showed statistically significant improvements in mean % change from baseline in ADAMS Total Score, as well. The extension trial also contributed to a more robust safety dataset. The most common treatment-emergent adverse events were gastroenteritis (14%) and upper respiratory tract infection (12%); no serious AEs were reported. A randomized, double-blind, placebo-controlled trial to extend these findings to a larger population is ongoing in Australia, New Zealand, and the U.S.

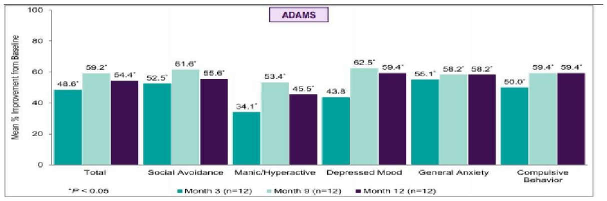
Figure 130 ZYN002 Produced Reductions In ADAMS At 12 Weeks...



Scale: ADAMS	Baseline (n=20)	Week 12 (n=18)	Week 12 Δ (% Improvement Group Mean)	P-value[a]
Total Score	33.4	18.1	-14.1 (45.8)	<0.0001
Social Avoidance	10.2	4.8	-5.1 (52.9)	0.0002
Manic/Hyperactive Behavior	9.4	6.1	-2.7 (35.1)	0.0003
Depressed Mood	2.8	2.0	-0.9 (28.6)	0.1417
General Anxiety	10.0	4.6	-4.8 (54.0)	<0.0001
Compulsive Behavior	2.8	1.4	-1.2 (50.0)	0.0262

Source: Zynerba

Figure 131 ...And Efficacy Persisted Out To 12 Months In An Extension Study



Source: Zynerba

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Industrial Hemp And Sustainable Bioproducts (Osborne)

Figure 132 - Industrial Hemp Use Cases

Part of Plant	**Fiber**	**Hurd**	**Entire Stalk**	**Hemp Nut**	**Hemp Oil**	**Seed Cake**
Product Category	**Textiles**	**Building Materials, Industrial Products, Paper**	**Energy Products**	**Foods**	**Foods, Personal Care Products, Technical Oils**	**Pressed Products**
Common Uses	Apparel Netting Canvas	Fibre Board Mulch Printing Cardboard	Ethanol Biofuels	Bread Granola Cereal	Supplements Soap Cosmetics Solvents, lubricants, fuels	Animal Feed Proteins Flour

Source: Cowen and Company

Hemp plants have been used for industrial applications for thousands of years. Hemp stalk fiber was traditionally used as a textile for use in rope; clothing; and sails due to its tensile strength. Hemp seeds are used in foods and compressed to make oils that were used as a lighting fuel. The original diesel engine was designed to run on a variety of biodiesel fuels, including vegetable oils and seed oils, which included hempseed oil. In 1937, hemp production was banned due to its similarity to marijuana despite low THC presence, but to aid the war effort the federal government requested that farmers plant industrial hemp to make up for a shortfall in imports from the Asian Pacific. Farmers planted 36,000 acres of hemp in 1942 and set a target of 50,000 acres in order to produce the 34,000 feet of hemp that was needed in each Naval battleship and for other textile uses. The cheap availability of petroleum based synthetic products and federal regulations against hemp production caused hemp production to decline rapidly again after the war in the U.S. and throughout most of Europe. As hemp now looks to make a comeback in light of recent legislation, we see the use cases for industrial hemp to include many of the traditional textile and food uses that were previously common, in addition to the growing CBD market.

Figure 133 - Industrial Hemp Imports In 2017 ($1,000)

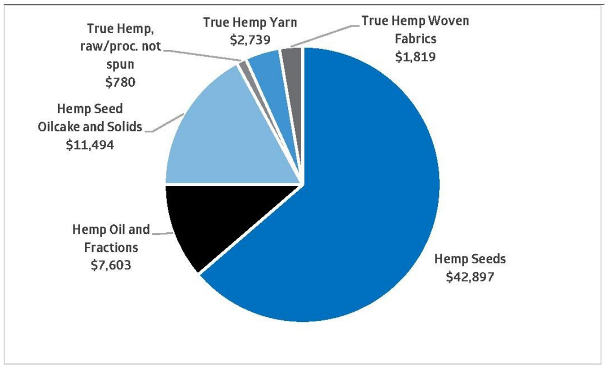
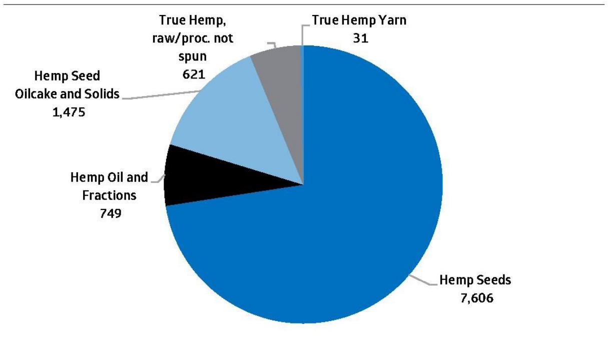


Figure 134 - Industrial Hemp Imports In 2017 (Metric Tons)



Source: Cowen and Company, Compiled by CRS using data from the U.S. ITC

Sustainability Of CBD And Hemp Production

As the CBD industry grows in size, we believe that producers will look to minimize the environmental impact of production. In addition, we could see producers try to monetize the entire waste stream of the hemp production process by converting parts of the plant that aren't used to produce CBD or other products into biomass energy. We believe the most common use cases for hemp biomass will be in the form of pelleting for

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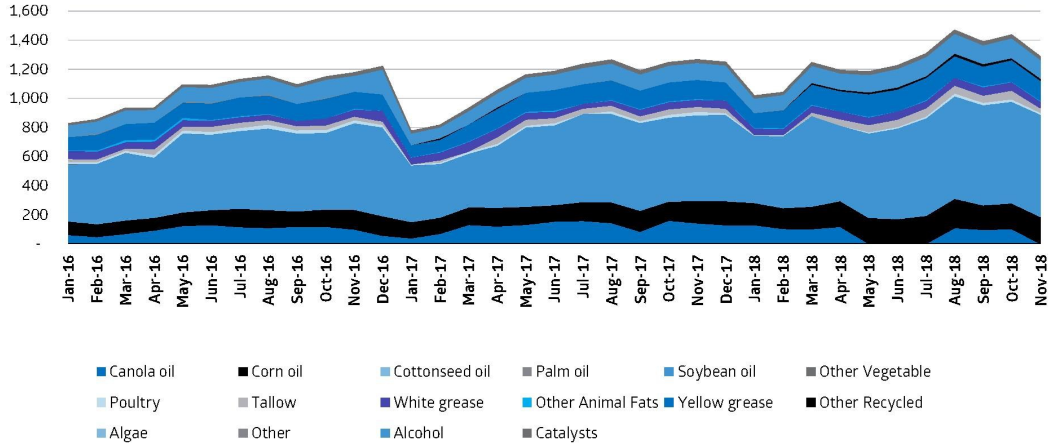
use as heating fuel, and also see potential to act as a cellulosic biofuel. The process of pelleting industrial hemp biomass would be a similar to that of pelleting wood waste, which gets converted into densified biomass products such as roundwood, pulpwood, sawmill residuals, and wood product manufacturing residues, which typically cost ~$30 per ton. Wood biomass fuel has an annual capacity of 12.6 million tons per year and produces ~675 GWh per year in energy. Access to local refineries is key to utilizing hemp biomass as a cellulosic biofuel. Through local access to refineries, the fuel can be refined while transportation costs, which can make the products uncompetitive, are minimized. Given the commoditized market for biodiesel however, where soybean oil has ~50% of the market input by weight and corn oil has ~15% of the market input by weight, we do not expect hemp to materialize as a meaningful player due to the competitive advantage of high production crops competing for low cost production.

Figure 135 - Biodiesel Production By Input (Millions Of Pounds)



Source: Cowen and Company, EIA

Biochemical CBD Production Methods

CBD is most commonly produced by either CO2 or ethanol extraction from hemp plants. In CO2 extraction, plants are filtered through a series of chambers with temperature and pressures applied to the plants that isolate the cannabinoids. The C02 method is able to isolate CBD at a 90% efficiency and is typically used when producing small quantities. Ethanol extraction introduces the hemp plant to solvent ethanol and enables higher volumes production. In addition to hemp-based production of CBD, we believe the opportunity exists for players within the biochemical space to produce CBD by utilizing a fermentation approach from other feedstocks. Amyris recently announced a $255 million cannabinoid development, licensing and commercialization agreement. Amyris plans to utilize the C5 molecule found in sugarcane in a fermentation process to produce CBD. The company believes that the fermentation process ensures a level of purity that is not possible through traditional plant-based production, where CBD levels can vary from plant to plant. In order to build out the industrial scale necessary for mass food market, CBD products will need to be produced at standardized levels. Given Amyris plans to produce CBD at its Brotas plant in Brazil, which is fueled by biomass co-product of the nearby sugarcane fields, we believe this will be an attractive option for companies looking to integrate CBD into their products sustainably assuming the company is able to produce cost competitively with hemp plants.

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Appendix

Figure 136 Cannabis Comp Table

			Price	52 Week				Enterprise Value /						
Company Name - Non-Coverage	**Ticker**	**Local Curr**	**2/22/2019**	**Low**	**High**	**Market Value**	**Enterprise Value**	**LTM Rev**	**FY1 Rev**	**FY2 Rev**	**FY3 Rev**	**FY1 EBITDA**	**FY2 EBITDA**	**FY3 EBITDA**
1933 Industries Inc	TGIF.CD	CAD	0.56	0.30	0.80	133	131	8.8	4.3	3.1	NA	31.2	11.8	NA
Aphria Inc	APHA.N	USD	10.18	3.75	13.45	2,535	3,219	56.2	NA	NA	NA	NA	NA	NA
Aurora Cannabis Inc	ACB	USD	6.96	3.90	12.53	6,948	9,318	78.2	NA	NA	NA	NA	NA	NA
Charlotte's Web Holdings Inc	CWEB.CD	CAD	18.15	9.05	22.75	1,678	1,199	NA	17.1	7.6	4.4	51.1	21.5	12.0
Cronos Group Inc	CRON.O	USD	21.92	5.12	25.10	3,892	5,113	NM	NM	37.7	29.2	NM	122.0	96.1
Curaleaf Holdings Inc	CURA.CD	CAD	10.25	1.43	26.01	3,412	3,412	NA	38.3	9.3	4.7	NM	27.8	12.9
CV Sciences Inc	CVSI.PK	USD	4.90	0.37	9.20	463	453	11.0	NA	NA	NA	NA	NA	NA
Elixinol Global Ltd	EXL.AX	AUD	3.47	1.34	3.69	161	148	NA	1.4	1.2	1.0	14.6	7.6	6.3
Emblem Corp	EMC.V	CAD	1.78	0.83	2.12	234	202	35.4	24.4	2.7	1.4	NM	18.2	5.6
Emerald Health Therapeutics Inc	EMH.V	CAD	3.89	2.04	6.35	554	504	NM	NA	NA	NA	NA	NA	NA
Green Organic Dutchman Holdings Ltd	TGOD.TO	CAD	3.69	2.06	9.64	989	789	NA	53.6	4.0	1.4	NM	NM	6.3
Green Thumb Industries Inc	GTII.CD	CAD	19.69	8.21	32.50	1,257	859	NA	13.0	4.0	1.9	NM	19.2	5.6
Khiron Life Sciences Corp	KHRN.V	CAD	4.05	0.87	4.35	308	294	NA	NM	24.6	3.9	NM	NM	15.3
Level Brands Inc	LEVB.N	USD	5.05	2.60	8.41	51	43	4.7	NA	NA	NA	NA	NA	NA
Neptune Wellness Solutions Inc	NEPT.O	USD	3.67	2.27	5.14	295	374	14.5	14.1	6.1	2.7	84.2	30.6	11.1
OrganiGram Holdings Inc	OGI.V	CAD	7.74	3.26	8.55	1,013	1,016	NA	8.2	4.3	3.2	19.5	11.6	8.8
Company Name - Coverage														
Canopy Growth Corp	WEED.TO	CAD	58.51	23.88	76.68	20,071	16,142	NA	NM	74.2	34.9	NM	NM	105.0
KushCo Holdings Inc	KSHB.PK	CAD	6.38	3.76	7.20	560	16,142	NA	NM	NM	NM	NM	NM	NM
Tilray Inc	TLRY.OQ	USD	79.07	20.10	300.00	7,367	16,142	NM	NA	NA	NA	NA	NA	NA
Turning Point Brands Inc	TPB	USD	41.00	19.11	47.00	802	16,142	NM	NM	NM	NM	NM	NM	NM
				Overall Min		50.6	42.6	4.7	1.4	1.2	1.0	14.6	7.6	5.6
				Overall Mean		2636.1	4582.0	29.8	19.4	14.9	8.0	40.1	30.0	25.9
				Overall Median		895	937	14.5	14.1	5.2	3.2	31.2	19.2	11.1
				Overall Max		20,071	16,142	78.2	53.6	74.2	34.9	84.2	122.0	105.0

Source: Thomson Reuters and Cowen and Company

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VALUATION METHODOLOGY AND RISKS

Valuation Methodology

Cannabis: Our valuation methodology is primarily based on Relative EV-to-Sales (EV-to-Sales divided by Sales-Growth), followed by EV-to-Sales.

Investment Risks

Cannabis: Cannabis is an emerging industry and is subject to regulatory headwinds. While over 50% of the population is in favor of legalization, only a few states have thus far legalized cannabis for recreational use and the product remains illegal at the federal level. Looking forward, much work and change still needs to occur in order for this industry to realize its full potential.

Risks Pertaining to U.S. Cannabis-Related Companies: If you are considering investing in a U.S. company that is connected to the cannabis industry, be aware that cannabis-related companies may be at risk of federal and/or state criminal prosecution. The Department of Treasury has issued guidance that The Controlled Substances Act ("CSA") makes it illegal under U.S. federal law to manufacture, distribute, or dispense cannabis and cannabis-related products. Many states impose and enforce similar prohibitions. Notwithstanding the federal ban, however, many U.S. states and the District of Columbia have legalized certain cannabis-related activities.

Risks Pertaining to Canadian Cannabis-Related Companies: In Canada, cannabis is an emerging industry and is subject to regulatory headwinds. While medical cannabis is legal in Canada, legislation has also been introduced to legalize adult-use sales on October 17, 2018. An initial regulatory framework has been laid out for the adult-use market, looking ahead, the category will be subject a number of potential headwinds, including taxes and restrictions on from factors and packaging.

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ADDENDUM

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Stocks Mentioned In Important Disclosures

Ticker	Company Name
WEED	Canopy Growth Corporation
GWPH	GW Pharmaceuticals Plc
TLRY	Tilray
TPB	Turning Point Brands

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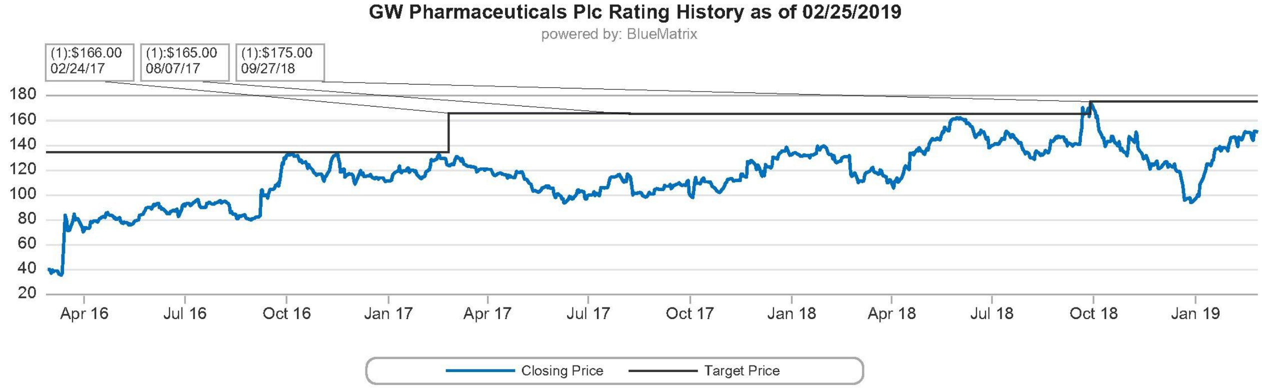
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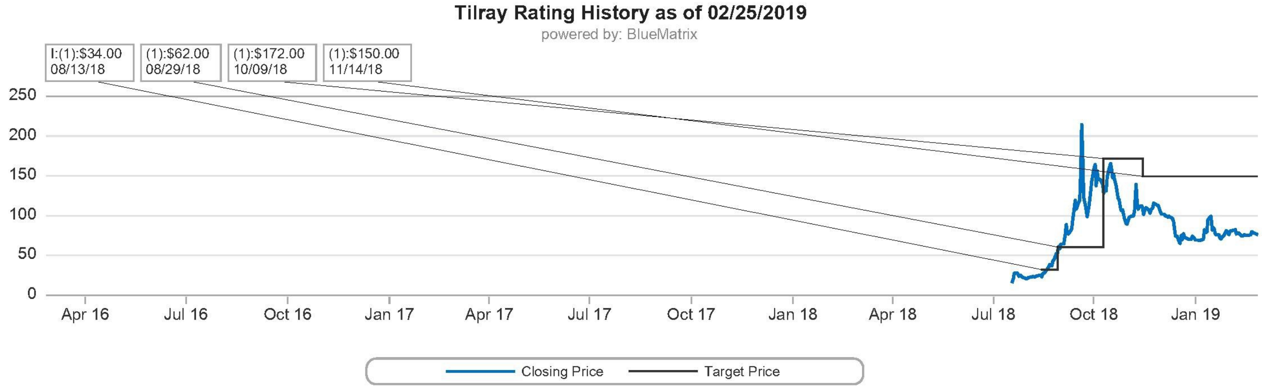
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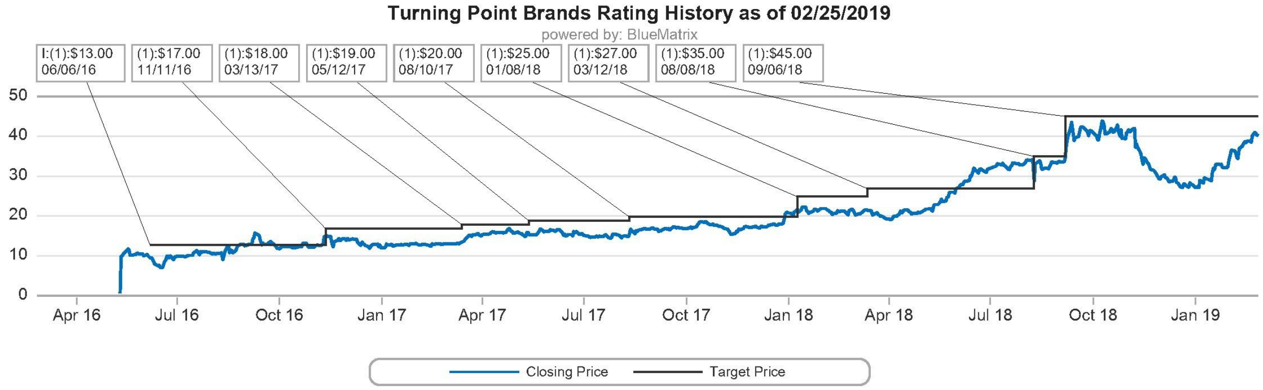
Turning Point Brands Rating History as of 02/25/2019
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Canopy Growth Corporation Rating History as of 02/25/2019

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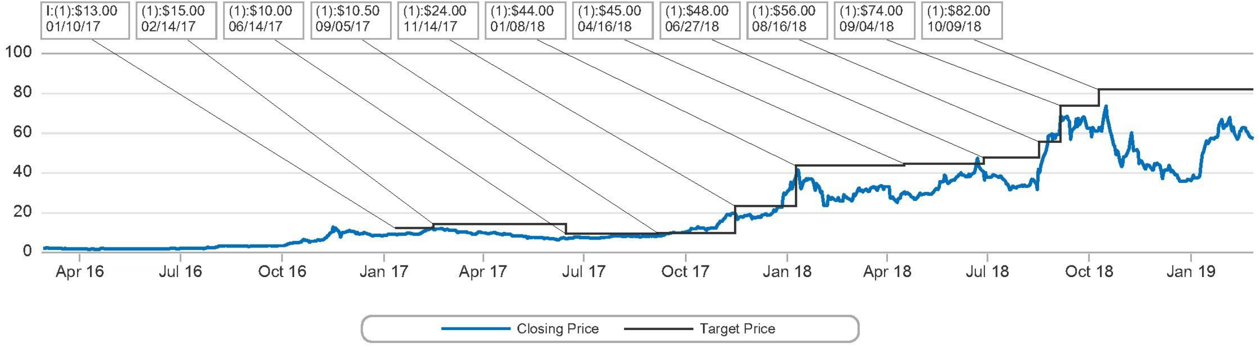

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POINTS OF CONTACT

Author Profiles

Cowen Research
New York
646 562 1330
cowen.research@cowen.com

Vivien Azer
New York
646 562 1351
vivien.azer@cowen.com

Vivien Azer is a senior analyst covering beverages, tobacco and cannabis. She joined Cowen in 2014.

John Blackledge
New York
646 562 1359
john.blackledge@cowen.com

John Blackledge is a senior analyst covering the Internet sector. He joined Cowen in 2012 as the head of Internet research.

Andrew M. Charles, CFA
New York
646 562 1332
andrew.charles@cowen.com

Andrew Charles is an analyst focused on restaurants. He has spent over seven years on the sell side covering the sector.

Oliver Chen, CFA
New York
646 562 1424
oliver.chen@cowen.com

Oliver Chen is an *II*-ranked analyst covering retailing/specialty, broadlines, department stores, & luxury goods. He has an MBA from Wharton.

John Kernan, CFA
New York
646 562 1324
john.kernan@cowen.com

John Kernan is a research analyst focused on apparel, footwear and textiles. He has spent seven years on the sell side covering the sector.

Phil Nadeau, Ph.D.
New York
646 562 1336
phil.nadeau@cowen.com

Phil Nadeau is a senior analyst covering biotech. He joined Cowen in 2000 and holds an SB/M.Eng from MIT, and a Ph.D. from Harvard.

Charles Neivert
New York
646 562 1370
charles.neivert@cowen.com

Charlie Neivert is a senior research analyst covering agricultural & commodity chemicals. He has a BA from University of Pennsylvania.

Jeffrey Osborne
Stamford
646 562 1391
jeffrey.osborne@cowen.com

Jeff Osborne is an analyst covering sustainable energy tech. He has a BS from Trinity University and an MBA from Wayne State University.

Charles Rhyee
New York
646 562 1376
charles.rhyee@cowen.com

Charles Rhyee is a senior analyst covering health care IT and distribution, which he has followed since 1999. He joined Cowen in 2011.

Eric Assaraf
Washington, DC
202 868 5304
eric.assaraf@cowen.com

Eric Assaraf is with Cowen Washington Research Group covering health care. He received degrees from the University of Maryland.

Doug Schenkel
Boston
617 946 3918
doug.schenkel@cowen.com

Doug Schenkel is a senior analyst covering tools and diagnostics. He joined Cowen in 2005 and holds an M.B.A. from the UCLA Anderson School.

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Main U.S. Locations

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599 Lexington Avenue
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Suite 100
Rocky River, OH 44116
440 331 3531

San Francisco
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San Francisco, CA 94111
415 646 7200
800 858 9316

Atlanta
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Atlanta, GA 30326
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Stamford, CT 06902
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Suite 520
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202 868 5300

International Location

Cowen International Limited

London
1 Snowden Street - 11th Floor
London EC2A 2DQ
United Kingdom
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From: paul krassner [redacted]
Sent: 5/15/2019 12:17:32 AM
To: George Krassner [[redacted]; nick kazan [[redacted]]; Mrisman02 [redacted]; Rebecca Risman [[redacted]; Linda W. Grossman [redacted]]
Subject: rather long and a few typos

REMEMBERING CAVALIER MAGAZINE

LAUNCHING A MAGAZINE

My friend Michael Simmons, who has been the editor of *National Lampoon* and *High Times,* observes that *Cavalier* hired fine scribes. A few examples: Thomas Pynchon, Philip Roth, William Saroyman, Isaac Asimov, Theodore Sturgeon. *Cavalier* was launched by Fawcett Publications in 1952.

Men's magazine *Cavalier* (motto: "For the American Male") was published the year before *Playboy* to whom it has often been compared, and back in the day tried to be seen as slightly hipper, more youthful and considered a bit more clever than its big name rival. Almost an anti-establishment *Playboy.* A slogan stated: "Your dad bought *Playboy*, you bought *Cavalier*."

I BECAME A COLUMNIST

I was invited to write a column, named "The Naked Emperor," for *Cavalier*, that was beginning to publish underground writers and artists. They paid me $1,000 a month. My first column was a report on an auction of two-inch squares from the hotel bedsheets slept on by the Beatles during their first trip to America.

There were 300 screaming young girls, off on a fetishist's holiday. Obviously, there wouldn't be enough items to go around, but it was announced that the Beatles' unwashed towels and bed linens were to be cut into two-inch squares and sold for $1 each. The price included a notarized statement of authenticity.

My second column was about Lenny Bruce—titled “Lenny the Lawyer,” since he defended himself in trials He was arrested for obscene performances only because there were no blasphemy laws. I went to the bank and deposited my check, withdrawing half of it in cash, a $500 bill. Lenny was alone in his hotel room on Christmas Day when I presented it to him. And, with a large safety pin, Lenny attached the $500 bill to the outside breast pocket of his denim dungaree jacket.

AFTER JFK ASSASSINATION

In another column of mine, “Jack Ruby and His Dirty Little Secret,” it began, “Lenny Bruce told me how all the night club comics used to Jack Ruby’s “tattoo of a lady’s *schmutzik* (translate: pussy) in his armpit.” If it wasn’t a fact, I was quite willing to settle for an apocryphal allusion which nevertheless crystallized the entire personality of that alleged murderer who wanted so very much to be liked.

I say *alleged* because upon Ruby’s own death. Dallas District Attorney Henry Wade said he would dismiss the murder charge against him, a promise which has since been kept, although no such posthumous grace was ever officially bestowed on Lee Harvey Oswald. See, they grant you retroactive innocence only in the face of innumerable witnesses who were present at the actual event through the miracle of inadvertent televised coverage.

Now Jack Ruby’s dirty little secret has been forever sealed away in his armpit by the hymen of history. Oh yeah, and at Lenny’s funeral, that safety pin was still attached on his jacket.

JULES SIEGEL

Two years before Lenny’s death, with his permission I published his obituary in my own magazine, *The Realist*. Before the issue went to press, he called his mother and a few others to let them know it would only be a hoax. The point was that he couldn't get work and his work was his life so he might as well be dead. And if people regretted that they hadn't helped him, well, now they could have a second chance because he was still alive. The obituary evoked inquiries from newspapers, wire services, foreign publications, radio and TV.

"What's the meaning of it?" one editor asked me. "There's a lot of excitement at the city desk."

"That *is* the meaning of it."

A few years later, without my permission, Jules Siegel, the editor of a short-lived magazine, *Cheetah*, published a fake obituary of me. I thought it was funny. An Associated Press reporter called, and I explained that it was a hoax.

"Are you sure?" he asked.

"Of course. I would tell you if I was dead."

Siegel started writing for *Cavalier.* His first assignment was a profile of Sterling Hayden, an actor best known in *Dr, Stranglove or How I Learned to Stop Worrying and Love the Bomb.*

Journalist Adam Ellsworth described Siegel's "Goodbye Surfing, Hello God" with his most famous example of rock journalism, but his most revolutionary was his article, "The Big Beat." It appeared in the *Playboy*-esque *Cavalier* magazine in 1965 and was one of the earliest writings he'd ever seen on the development of rock and roll, from slaves singing in chains on their way to America to Bob Dylan "going electric" at the Newport Folk Festival.

Then Jules' friend, Arthur Kretchmer, became *Cavalier's* managing editor. "When the editorial director later resigned," Kretchmer said, "there was a 24-hour hiatus before the new editor arrived." Siegel and Kretchmer had been discussing the possibility of publishing an issue on rock and roll, so to make it happen, Kretchmer went into the office at night and retyped the magazine's schedule to include their ideas.

When the new editorial started, Kretchmer handed him the schedules and said, "Here's what we're working on." The new editorial director suspected nothing and the rock and roll issue went ahead. Once the laughter died down, Jules talked for a good 25 minutes about some of the ups and downs of his writing career and how hard it is to make a living as any kind of a writer, let alone a “rock journalist.” and the people who created it, seriously.

Now everybody writes about rock and roll that way. Jules was one of the people who did it first. “Goodbye Surfing, Hello God!” is Jules’s most famous example of rock journalism, but I think his most revolutionary is his article “The Big Beat.” It appeared in the Playboy-esque *Cavalier* magazine in 1965 and is one of the earliest writings I’ve ever seen on the development of rock and roll, from slaves singing in chains on their way to America to Bob Dylan “going electric” at the Newport Folk Festival.

Jules Siegel died of a heart attack on November 17, 2012 at the age of 77. He was a brilliant author, but neither *Rolling Stone* nor the *New York Times* honored him with an obituary. Not even a fake one.

COMIC STRIPS

Art Spiegelman tells me his work at *Cavalier* 50 years ago:

I was first invited into the mag to do two full-color comix pages in 1969 (when being printed in color was a Very Big Deal for me as was Getting Paid more than 25 bucks for a drawing), somehow in proximity to a big article on underground comix. It was around the time Vaughn Bode was made a regular contributor to the magazine, They were running some Crumb “Fritz the Cat” pages. All thanx to their hip, laid back and kind editor, Alan LeMond.

I also did some gag cartoons, short strips and occasional illustrations for *Cavalier* (one especially bad drawing for a story by Bruce Jay Friedman, I recall). My work in 1969, as an apprentice underground cartoonist taking too many drugs was really, really awful so I'm grateful for the editor's hip and laid-back kindness. But, hey, I was proud to be in a mag that published pieces by Pynchon, Manny Farber and you.

By the time I'd gotten incrementally better as a cartoonist in the first half of the 1970s I was regularly doing illustrations for soft-core fiction stories in *Cavalier's* low-rent sister mags, *Dude, Gent* and *Nugget* (even wrote a story or two there and got several of my San Francisco comix cronies (Spain Rodriguez, Bill Griffith and Justin Greene) illustration gigs with Alan for those mags as well.

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[Note in Wikipedia: *Maus* is a graphic novel by American cartoonist Art Spiegelman, serialized from 1980 to 1991. It depicts Spiegelman interviewing his father about his experiences as a Polish Jew and Holocaust survivor. The work employs postmodernist techniques and represents Jews as mice, Germans as cats, and Poles as pigs. In 1992, *Maus* won a Pulitzer Prize.]

COMiING AND GOING

I wrote some movie reviews for *Cavalier.* I recall that *Midnight Cowboy* was 50 years ago. I always went to two screenings. The first one I would go stoned with magic mushrooms. The second one I took notes. However, I got fired by *Cavalier.*

They declined to publish a particular column—-my review of *MASH* as though it were a Busby Berkeley musical called *Gook Killers of 1970*-– ostensibly on the grounds of bad taste, but I learned that three wholesalers had told the publisher they were pressured by the FBI and would refuse to distribute *Cavalier* if my name appeared in it.

On top of that, my name was on a list of sixty-five "radical" campus speakers, released by the House Internal Security Committee. The blacklist was published in the *New York Times*, and picked up by newspapers across the country. It might have been a coincidence, but my campus-speaking engagement-bookings stopped abruptly. It felt just like a film.

OH, WELL

It was over for me, but it had been fun—like the issue with only the one large red headline on the *Cavalier* cover: "BEAT 'EM SENSELESS FIRST"—THE FREE SPEECH CONTROVERSY, BY PAUL KRASSNER . . . "Ironically," I wrote, "it is this concept of the total education experience *on* campus which I believe to be the basic significance of the much-misunderstood free-speech imbroglio at the University of California in Berkeley."

The sit-in lasted till 3 a.m. Next day, October 1, 1964, ten tables were manned again, and a campus policeman approached one of the tables (manned by the Congress of Racial Equality) where a dozen persons were seated. One was singled out and placed under arrest. But before you could say nonviolent demonstration, the police car was surrounded, its captors reaching as many as 3,000 students. During the late evening, bored fraternity men gathered and tossed lighted cigarettes and eggs on those sitting in the plaza. The demonstrators responded with silence.

Next day, 450 police assembled on campus to remove the cop car and its arrested inhabitant, but an agreement to negotiate was reached and the demonstrators dispersed. One of the folk songs to come out of the Free Speech Movement incidentally, was *If I Negotiate With You,* to the tune of the Beatles' *If I Fell in Love With You.*

Over the next couple of months there was a series of sit-ins and attempted negotiations, and then, on December 2, the infamous Sproul Hall sit-in. It took twelve hours for 800 students to be arrested by some 600 instructors of a new course called Introductory Police Brutality. These were from the lab notes student took.

There was a freshman co-ed at Berkeley who—long after she had forgotten what some professor spouted during an official lecture about Dostoevsky's *Crime and Punishment*—would remember, with perhaps a twinge of frightened pride, learning from a fellow demonstrator that if she planned to go limp when the police arrested her, it would be an act of practical feminine foresight to remove the earrings from her pierced lobes in advance.

So, now in 2019, fighting over free speech has been happening heavily at Berkeley campus again. Meanwhile, Trump grabbed a pussy on the Statue of Liberty. *Cavalier,* anyone?

Date: Saturday, April 18 2009 07:20 PM
Subject: Fwd: Fw: shikh mohammed first media e session
From: Jeffrey Epstein <jeevacation@gmail.com>
To: [redacted]

---------- Forwarded message ----------
From: **Sultan Ahmed Bin Sulayem** <[redacted]>
Date: Sat, Apr 18, 2009 at 3:03 PM
Subject: Fw: shikh mohammed first media e session
To: Jeffery vacation <jeevacation@gmail.com>

Sent from my BlackBerry® wireless device

From[redacted]
Date: Sat, 18 Apr 2009 14:06:58 -0400
To: <[redacted]>
Subject: shikh mohammed first media e session

UAE Prime Minister

First Media e-Session with the Prime Minister

Dear Friends in the Media:

I write this in the spirit of good will to thank all of you for your interest in communicating with me through the official Prime Minister's Web site.

This is the second time that I have responded to your questions online; the first time was eight years ago, when Internet communications were still in the nascent stage -- although, I must say, Dubai and the United Arab Emirates had already made noteworthy progress in this field. During that initial online interview, my objective was to stimulate the interest of the Emirati community in the Internet when the use of the online communications was relatively limited.

Today the usage of the Internet across the UAE has come to be taken for granted; in fact, the Web has been adopted so extensively in both the public and private sectors that e-communications are the norm rather than the exception. We see that a large segment of our society, especially young people, believe that the Internet is the most important source of information, education and entertainment.

The UAE continues to lead the Arab world in adoption of information and communication technology according to the annual global infor mation technology report released before yesterday.

Little wonder, then, that I get inundated with questions from citizens and media alike. That's why I have chosen to meet with you via my Web site. I think hosting this encounter online will allow all of you to ask as many questions as you wish. In the last few days alone, I have received hundreds of questions from several local and regional newspapers. Naturally, there was some overlapping of questions since they came from so many different sources. Hence, I have tried to consolidate my answers in such a manner that I do not come across as repetitious.

This "interview," of course, relates to questions from the media, whose work I consider especially significant in telling the story of how Dubai and the UAE are coping successfully with the global financial crisis, and how our development plans are being advanced with the resilience and determination that has always characterized Emirati society.

I have also received many questions from everyday Emiratis, and these will be answered in a subsequent communication.

In the meantime, I hope my responses will generate positive discussion about the issues and values that Dubai and the UAE care about – the strengthening of a society that's anchored in unique Emirati traditions, and the continued building of a global city to which all are welcome, a city that is well integrated in the fast changing global commons that we all must share. Dubai is not only a catalyst of change; it is an exemplar of change. And I am proud of that, just as I am proud of the economic and social contributions that Emiratis and their well-wishers have made over these years to furthering the Dubai Vision.
Al Hayat Newspaper - Shafiq Al Asadi

Your Highness, Dubai, the famous city known for its outstanding experience on both regional and international levels, has been recently criticized for its development strategy in the light of the global financial crisis. How do you perceive this campaign and how are you dealing with it?

Criticism and negative statements do not really disturb me. We do not mind receiving objective criticism that helps us improving our services and methods. If there were negative aspects, then we will address them and work toward revamping them. But following the global financial crisis, what we read and heard was not in reference to the negative aspects. In fact it was a "media bombardment" targeted at the UAE as a model for a federal state, a successful and prosperous Arab country. And Dubai, the city that has set up a successful economic model at a global level, was under a daily attack by some Western media, as if they were in a race against time to harm the UAE.

As for the motives of the campaign, God Almighty knows. But it seems that the success of the Arab, whether individual or state, city or a company, is seen as unacceptable. It seems that seeing=2 0distinct images of successful Arabs and Arab countries disturbs some people. They would rather stick with the distorted images of Arab stereotypes in their minds.

I need to stress here a very important perception. We are not growing in order to be a model for its highest building in the world, best airport, and most luxurious hotel, and the largest seaport and man-made islands. These landmarks and features are unique and famous all over the world. But the Dubai model is beyond that. Dubai is an Arab city with scarce natural resources but with a clear vision of comprehensive development and social needs. It is a city that succeeded through its investments in human resources, its unique geographical location, and its trade expertise. This has enabled us to achieve unmatched growth and to become the focal connection between the East and West. Dubai has proved as well the possibility of coexistence of different cultures in an open and tolerant Arab Islamic environment.

Dubai's model, which is part of the UAE model, lies in the success of the economy's diversification, and in sparking the interest of the Arab region and neighboring countries in the information and communication technology, the e-government and the knowledge economy, and in facilitating access to the people in our region to global best practices. Our international experiences in various areas are often on display through exhibitions, conferences and other activities.

Dubai's model also lies in proving the viability of investing in the region, of investing specifically in the knowledge economy and in human welfare. It has also raised the citizens' expectations in the region concerning levels of good governance and transparency, and the quality of public services and state-of-the-art infrastructure.

Dubai is about providing the highest international standards in education and health systems. It is a city with entrepreneurial spirit that entered into international investment areas and bought assets in global ports, airports and financial markets. Dubai succeeded in building a global financial center and entering into partnerships with reputed financial institutions, and was able to compete globally in the areas of air and sea transport, and charitable initiatives that were created to help developing the less fortunate countries.

These are some of Dubai's model features, which has attracted the attention of the world, and enticed the interest of the Arab region and its people, and inspired many people and motivated them. Is this the model that our critics are targeting?

I asked my brothers and myself this question and I did not expect a reply, because we are accustomed in the UAE to respond by work, not words. We believe in God and we have full faith and confidence in Him and in our people and businessmen and the many other believers in Dubai.

Abu Dhabi is also witnessing an attack since it succeeded in leading a successful Arab union and launched initiatives of a strategic and impo rtant nature such as "Masdar City.". I know that the international media have covered art initiatives in Abu Dhabi, including building an outpost of the Louvre. But one gets the impression that even in such coverage of important initiatives, there's invariably some reference or the other to discredited stereotypes of the Arab Gulf. Now the focus is on Dubai, and again the stereotypes are being brought up. It seems that any successful Arab model in economic development invites such negative treatment in the international media

To be fair, we read recently a few balanced articles reporting on what is the UAE doing regarding the effect of the global financial crisis on our region.
Al Hayat Newspaper - Shafiq Al Asadi

Your Highness, the media campaign has focused on pointing that Dubai is facing an economic crisis threatening the foundations of its economic development. What is the

actual impact of the crisis on Dubai economically and socially?

In fact, the campaign has gone much further than that. An American writer, well known for his extreme views, was so keen to project Dubai's alleged "failure" in the coexistence of cultures, that he went all the way stating that Dubai was a place where cultures break up and not where cultures meet. He reached that conclusion based on the fact that Dubai has jailed and deported a British couple caught having illegal sex on a public beach.

With regard to the fact that the global crisis effect threatens Dubai's growth and economy, I can guarantee you that those references constitute "wishful thinking" on the part of some people; they are illusions, not realities. The economic foundations and development are firm and stable; otherwise Dubai would not have been able to deal efficiently with the global financial crisis consequences. In addition to that, Dubai is not a city on its own. It is a member of the United Arab Emirates federation, which is strong, resilient and successful – a federation that is able to face the most difficult challenges.
Al Hayat Newspaper - Shafiq Al Asadi

Your Highness, the foreign media are reporting on the "bubble burst." What would you tell the people who are endorsing this view?

I keep hearing the expression of "the bubble" for the past couple of decades. In my opinion, this bubble is found only in the minds of those who often keep repeating it and do not know its meaning. The future will prove to them the truth.

Let me assure you we are fine, we have overcome the crisis with the least amount of losses. In our culture, we say: be virtuous and you will gain. That is why we always look at the half full cup of water, and when we look at the empty part, we do not moan over the void, instead we think of better and faster ways to fill it.
Al Hayat Newspaper - Shafiq Al Asadi

Your Highness, if we were saying this is an unfair campaign against Dubai then, could you explain to us how to get out of the current crisis?

The impact of the global financial crisis has been felt all over the world. It generated a state of panic in all developed economies. It was expected that our region would not be immune to the crisis, especially in view of the fact that it led to the credit freeze, write-downs at banks, deferral of mutual credits, and a freeze on lending in some of the wealthiest industrialized countries, such as the United States.

The crisis hit the world in September 2008, but I think that the panic pha se is over now, especially after the intervention of governments in many major countries to regulate financial and banking sectors, and the allocation of large sums of money to revitalize their economies. This step has enabled the summit of the G20 that was held in London a few days ago, to agree on a package of decisions and actions aimed to revive the global economy and the organization of the international markets.

For us in the United Arab Emirates, I can safely say that we have succeeded in containing the risks of the global financial crisis in record time. This is a result of the good policies of the Central Bank, and the government's action to ensure the liquidity of banks and the protection of deposits, and other actions at the local level, such as the additional liquidity that the Abu Dhabi government pumped it into the Emirate's banks and the bond issuance of $20 billion bonds.

The crisis management in addition to the decisions taken during the G20 summit have spread a high degree of

satisfaction and optimism around the world, and reflected positively on all the nations including the UAE, which has always had a strong, multi-potential and diverse economy.
Al Hayat Newspaper - Shafiq Al Asadi

The Federal Government has taken swift action to deal with the crisis, but many observers say that these actions are not sufficient to help the UAE, and Dubai in particular, to be free of the crisis?

The actions that we took at the Federal Government were really fast, well thought-out to respond to the issues and to overcome the negative effects of the global crisis. Having said that, our economy has shifted from the crisis mode to the solution. Of course, we are monitoring and following up our situation and the development of all the economic sectors through federal and local specialized committees, just as we follow developments in the global economy and international markets. We thank God; most of the indicators seem positive now and call for optimism. However, should we face future developments further actions, then we won't sit back.
Al Hayat Newspaper - Shafiq Al Asadi

When Du bai launched the $20 billion bonds and the UAE Central Bank subscribed in it with $10 billion, it was interpreted as help from Abu Dhabi to Dubai to get out of the crisis. How do you evaluate this action by the UAE Central Bank, and what about the second tranche of the bonds, which would another $10 billion?

When Dubai launched the $20 billion bonds and the UAE Central Bank subscribed in it with $10 billion, it was interpreted as help from Abu Dhabi to Dubai to get out of the crisis. How do you evaluate this action by the UAE Central Bank, and what about the second tranche of the bonds, which would another $10 billion?It seems that people are not aware of the life realities in the United Arab Emirates. Well, I welcome this interpretation because it emphasizes the depth of ties among the Emirates and ensures the strength of our Central Bank and its confidence in Dubai's economy.

We have announced bonds totaling $20 billion, raised half of it as a public offering, then the Central Bank subscribed to the full amount; we will pay an annual interest rate of 4 percent annually on the five-year coupons. What we put forward, meets our needs at this stage. Should we need the second part – that is, $10 billion -- we will then announce it to the public; we know that it will be of interest to many.
Al Hayat Newspaper - Shafiq Al Asadi

There are talks that Dubai would be selling few20state owned companies and that Abu Dhabi will be its partner in many projects in place or under implementation. What is the truth in this?

These rumors and speculations turned into news and headlines in several prominent international newspapers. Rest assured that between Abu Dhabi and Dubai, there is no buying and selling. Everything in Dubai belongs to Abu Dhabi and Dubai and the rest of the UAE, and all that is in Abu Dhabi belongs to Dubai and Abu Dhabi, and the rest of the UAE. Let me remind you about what The President, His Highness Sheikh Khalifa bin Zayed Al Nahyan, said last month about this matter. He said that the impact of the current global financial crisis on the national economy of the United Arab Emirates has been misunderstood and exaggerated. He said that the relationship between members of the UAE Federation has been misrepresented.

"We are … one strong, coherent body. As for the measures taken (at) the federal or local level, to address the

crisis, they were declared and (made) clear-cut. There was no need to unleash predictions in this respect," His Highness said.
Al Hayat Newspaper - Shafiq Al Asadi

YYour Highness, do you feel that Dubai is threatened as a result of the current crisis?

We did not at any time feel that the financial crisis is a threat. The worst is over and behind us. Since the eruption of the crisis we did not hear of any state-owned bank or company announcing bankruptcy. None of the economy sectors was snapped. We are currently implementing plans and programs of action to benefit from the lessons of the crisis and ensure the recovery of the negative effects.
Al Hayat Newspaper - Shafiq Al Asadi

The recent murders that occurred in Dubai seriously raised the issue of security despite the speed of discovery of the perpetrators of these crimes. How would you respond to the statements that the prevention of the assassination should come first?

Of course, prevention is better than cure. To prevent killing is a very valuable act. Often, people hear about the cure procedures, but they do not hear about the actions of prevention. Murders that took place in Dubai in recent months, were fewer than half of one hand's fingers -- and this is not to minimize the seriousness but just to confirm that it is an exception and the rule is that the UAE, including Dubai, is one of the most secure and stable countries, and this would not happen without having our authorities taking preventive measures of utmost importance. In any case, the crime rate in the UAE, including Dubai, is one of the lowest in the world, and we are working to remain so, and the murder of two known figures will not change the reality.
Al Hayat Newspaper - Shafiq Al Asadi

With the brunt of the global financial crisis on Dubai, we noticed the continuation of most of the art, culture, media, sports, and cultural activities, in addition to the enormous financial awards being bestowed by various organizations for business efficiency, among other things. How do you explain this?

These activities were scheduled prior to the crisis, and some of them are annual events such as the Dubai World Cup, the Arab Media Forum and Arab Journalism Award. Some new events were launched, such as the World Poetry Festival -- but I don't know why you are wondering about the continuation of those activities. In fact, it would be a strange thing to cancel them. With regards to the prizes, they remain as were previously announced. Do you suggest in your question that these awards have become a burden to Dubai? If so, I promise we are in a good shape. All our projects under implementation have not ceased, and we are paying our loans and debts on time, and all suppliers and contractors have begun to receive their entitlements.
Al Hayat Newspaper - Shafiq Al Asadi

Your Highness, the media is focusing currently on the large layoffs from the companies working under the umbrella of Dubai Holding. What is the truth regarding this matter, especially that the issue is going to reach its peak in the coming months?

The collapse of the global debt markets has pushed all the big companies worldwide to review their plans, expe nses and strategies and urged them to restructure their managements including the human resources. "Dubai Holding" is not an exception at all. All its companies work on a commercial basis, and it is normal to lay off the

employees who do not have roles to play during this situation. I am not sure why people are expecting a peak in the coming months. The whole process is a restructuring course that was well received by all Dubai Holding employees.
Al Hayat Newspaper - Shafiq Al Asadi

Your Highness, Dubai was accused in the media that laid-off Arabs descend from a specific nationality, what is the reality?

Rumors feed on human emotion. Verifiable facts, and even simple common sense, have little or nothing to do with the way a rumor spreads. I would say that due to the steep global crisis effect on domains such as PR and advertising, which employ by coincidence a large number from a particular nationality, or the construction sector which also employs a large number of architects from one nationality, there is absolutely no focus on laying off any Arab or non-Arab nationality.
Al Hayat Newspaper - Shafiq Al Asadi

Your Highness, your recent visit to Russia complements your strategy in visiting the strong economic countries worldwide such as Germany and China last year. Do you think that these visits are still useful nowadays? Are you planning to20continue this approach and what is the objective of those visits? What was the outcome of your last visit to Moscow?

This is a strange question. We are pretty sure that this crisis will not last forever, and that it will end. The UAE has always had good relations with all countries around the world and especially the weighty economic countries. Our duty is to work toward developing and enhancing those relationships. In fact, during global crisis countries should broaden those visits and enhance their bilateral relations especially since this crisis may result in forming a new economic and political world construct.
Al Hayat Newspaper - Shafiq Al Asadi

Your Highness, do you think that the current crisis would impose new changes on the federal and local levels in the UAE as rumors are spreading regarding a change in progress in the cabinet?

It is obvious that things do change. Whoever does not take up the new situation and cooperate positively with it for the benefit of the nation and nationals would be incompetent. However, it is you who's saying that there are rumors that a change in the cabinet is under way.
Al Hayat Newspaper - Shafiq Al Asadi

Your Highness, people who are aware of the relationship between Dubai and Abu Dhabi say that there is no need to worry about the effect of the crisis on Dubai because it relies at the end of the day on the financial strength of Abu Dhabi, which owns the biggest sovereign fund in the world. What would you say?

Those people know well that they can't bracket the relationship between both Emirates into just a financial relation. The money element is a very minimal component in a superior relationship built on family ties with a unity soul, with "tolerance" essence and foundation concurred by both Sheikh Zayed and Sheikh Rashid on 18

February 1968, when they met and issued a historical statement announcing the establishment of a federal union between Abu Dhabi and Dubai and called on their brothers in the neighboring emirates to join the union. Do you know what it meant for us to stand few days ago with His Highness Sheikh Khalifa at the "Union House" under the UAE flag, and in the same place where our ancestors stood the day of the UAE announcement? Would you be able to appraise our feelings at that moment? These are moments that you cannot ponder easily. They are priceless.

Those who know the truth about the Abu Dhabi and Dubai relationship and all the other Emirates, are well aware that the federation of the UAE is a choice of wise and liberated people who are guided by their heart, beliefs and wisdom. They are people who God Almighty described as ready to sacrifice their souls for others. Again, I remind you of what His Highness Sheikh Khalifa said. "We are … one strong, coherent body.
The National Abu Dhabi Media Company - Matt Slater

The United Arab Emirates is a federation but there is a tendency, particularly in health and education, to allow individual emirates to dictate policy. Will this continue or will the federal government seek to establish a more unified national approach on domestic policy?

None of the seven emirates develops its own independent health and educational policies. All legislation and policies related to education and overall health are developed at the federal level. What is happening is precisely the expansion of the decentralized planning and implementation in order to raise the efficiency of education and medical services. This is what we see in industrialized countries, such as the United States and the United Kingdom, Germany, Switzerland and others. Our experience in education foundered for many reasons, and we are racing against time to make up for what we missed and to create sustainable development in the education sector. Of course, the process of development widens then to diversify the teaching methods and to attract broad participation of the private sector.
The National Abu Dhabi Media Company - Matt Slater

The Federal National Council has expressed concern that its views are ignored by the UAE cabinet and that, in reality, they have little power. What role do you see the FNC playing within the country's decision-making p rocess, and in what way is the Council likely to evolve in the future?

We never received any complaints against the government for ignoring the views of the Council; instead we always receive compliments and appreciation about cooperation. We constantly express our appreciation to the Council for its role in the decision-making process. In fact, draft laws first have to pass through the FNC for review and recommendations, and later sent back to the Cabinet for consideration and approval.

The Council is also empowered to summon and to question any Federal Minister regarding Ministry performance. We believe in the importance of the Council, and we respect its effective role in the process since its inception. The current session marked a beginning of change in the Council in the method of selecting its members. We witnessed for the first time the formation of election associations in the UAE to elect half the members of the 40-member Council, with 22 percent of members of the Council being women, one of the highest such rates in the world.

In any case, since the founding of the UAE we chose the approach of gradualism. We in the UAE do not work with a "burning stages" style. Our laws and procedures are in line with reality and our reticence. We believe that our people are satisfied with this approach that results in prosperity and stability.

I am well aware of the foreign reports that criticize the way that the UAE deals with the issue of democracy. These reports assess our system on the basis of their own history and cultural experiences, and the experiences of their countries – some of which have been democracies for more than 300 years. The easiest thing is to hold general elections and to place ballot boxes and to disseminate images and words about the greatness of democracy.

But our leadership does not look for fame, and does not import ready-made models that may be valid for other societies, but is certainly not suitable for our society. Some months ago, we celebrated National Day, our 37th. Do you know how we used to live before? Do you have any idea about the state of education and illiteracy, infrastructure and public services? Do you know the details of our society's infrastructure and how it was developed? Today, after the tremendous achievements in various fields, our people have full confidence in the process of empowerment -- empowerment of the economy, women, the administration, the and culture as well as political empowerment within our traditions and culture. The midterm elections of the members of the Federal National Council is a very important step in the progression toward what is acceptable to the interests of our people and our homeland.
The National Abu Dhabi Media Company - Matt Slater

The issues of labor rights and human trafficking continue to adversely affect the image of the UAE abroad. Whereas there are clear policies aimed at aligning the20UAE with international best practice on these fronts, the actual rate of prosecutions of those violating rights on these fronts are generally seen to be low. What is being done to address this?

I want you to look at the results of the last meeting of the International Committee for Human Rights in Geneva, and to look at reports that refer to the huge progress in the UAE with regard to these issues. Even the periodic reports issued by the U.S. State Department recognize this progress, particularly on the issue of human trafficking.

We care about the rights of workers; we care about reinforcing the freedom of people. Our aim is not to win the approval of international reports, but we are keen to promote human rights and also deepening the values of social justice and tolerance. We are keen to provide a model for Arab and Muslim countries that adheres to religious and cultural frameworks; we are keen to continue to interact with the international community. We want the respect and cooperation of all. Our religion and our values and ethics do not accept any violation of human rights and of people -- no matter where they work and where do they come from and what their belief and religion are. It's in our nature not to condone injustice, and we sympathize with victims and needy people. We have very active charitable institutions operating in a large number of the less fortunate countries. We cannot accept that any person, man or woman, would be defeated in their quest20for human dignity. As for the number of cases submitted in the courts for prosecution, I would say that it reflects the reality and it is considered to be high in comparison with the number of the UAE population.
The National Abu Dhabi Media Company - Matt Slater

Your Highness, you are Vice President and Prime Minister of the UAE, Ruler of Dubai, founder of the famous Godolphin horse-racing stable, sportsman and poet. How do you juggle your political and non-political roles, and what do you do for fun?

The day has 24 hours or 1,440 minutes, or 86,400 seconds. For me, this is sufficient time for work, hobbies and sports. It works if you respect time and you know how to organize your schedule. Whoever enjoys his work, it seems that you add five days to your week. I enjoy my work, which is my existence in my life: the service of my homeland and my people. My joy increases when I see the progress and prosperity of my homeland and my people. I do not work alone, I have a team whom I lead and encourage and on whom I rely. Within each human being there is an inexhaustible source of potential, but there is no human being with unlimited capacity. What is important is to know your capacities -- and how you should use them.

For fun, I spend my time with my family at the beach or in the desert. I love to read. I ride horses. My love for horses is indescribably enormous; it is part of20my soul and history.
The National Abu Dhabi Media Company - Matt Slater

How are the Federal Government and the Government of Dubai cooperating to re-tool the development model to address what many economists predict is a permanent reduction in credit available from international capital markets

Whether the available global credit declines or increases, the model of our economy is stable and is developing within the framework that we created earlier. Dubai's needs for credit tend to decline and the government's loans, which are modest, compared to the size of the economy, all concern investment in infrastructure, not current expenditures or operational budgets. The majority of our infrastructure projects are of a long-term productive nature, such as the Dubai Metro, the expansion of the power generation station, and so on. With regard to the loans of state-owned companies -- they are purely commercial in nature, and their calculations are based on the cost of the loan and the return on investment. The global financial crisis has affected the liquidity of the companies, and we believe that it is only a temporary impact. We have sufficient means to provide the necessary liquidity for these companies. I would like to stress that Dubai's economy is part of the UAE economy, and we cannot in any way deal with the situation as an independent entity. I will give you one example: We say Abu Dhabi banks, Dubai banks and Sharjah banks. These terms relate to the location of the headquarters only, since all banks operate in all the seven Emirates, and are subject to fiscal and monetary policy overseen by one body, and one central bank. In any case, credit is always available, and even a few months after the financial crisis, it had been available. Of course, this does not mean that all the available credit is desirable. This issue is a subject to extensive studies and discussions and to cost-benefit equations.
By Al-Sharq al-Awsat Daily

The question of population demography has been a source of worry to the UAE nationals, as it must certainly worry Your Highness. You have announced some initiatives in this regard, uncovering a few of them. Could you tell us more about these initiatives?

This question is important because of its ramifications and interconnection of its economic, social, and cultural dimensions. His Highness the President of the UAE has defined our approach toward this question. He has said that we have a positive outlook toward the demographic structure, showing the ability of our people and state to mix this human quantity and variety in a human framework, capable of creating a model highlighting the power of human interaction in the process of building and raising our state to assume an advanced position on the level of civilization and development. Such a model will help us in gaining the respect and appreciation of local and in ternational organizations for our human and civilized treatment of all residents in our country, providing incentives for them to take active part in the development process of the UAE.

This vision, as defined by His Highness the President, does not remove from our sight the necessity of preserving our national identity. This was the starting point which led to the formation of a high-level committee, headed by the minister of interior, to deal with the question of demographic structure. We highly appreciate the work of this committee, which drew out a number of initiatives to deal with this question and take active measures in this connection. We are preparing other measures and decisions within our declared and transparent policy for dealing with the question of demographic structure in a civilized manner, without violation of our human and international commitments, ensuring the objective of variation of the demographic structure in our country.

Naturally, our children and new generations will remain the actual solution for this question. Hence, the development of education, the competencies and capabilities of the UAE nationals will remain our main priority. We are optimistic about our youth, and proud of their spirit of national belonging, of their growing realization of the importance of self-reliance and active participation in building the homeland. I follow their activities and expect a great deal from them, and ask them to double their efforts in learning and enhancing their competencies in various fields, in20orders to become a distinguished group eagerly sought after by public and private sectors. We are eager to increase the rate of Emiratization in government and private sectors. I informed the Cabinet last march that the rate of Emiratization in the ministries has not reached the targeted level, as it did not exceed 54 percent and 25 percent in the Federal Authorities. I gave directives to prepare a study to denote the reasons for such a situation in order to draw suitable programs to fill this gap.
By Al-Sharq al-Awsat Daily

Almost a year ago, Your Highness introduced a major reshuffle in the Cabinet. You mentioned that any minister is liable to change. Is there a plan for a cabinet reshuffle soon?

There is a fact which should not be absent from the minds of people – that is, the government is at the service of the people. A reshuffle is introduced when there is a need for it, and when we find that it suits an active handling of the need of national demands, to ensure the power of the union to achieve the objectives of its strategy, and whatever objective that may come up to meet the actual developments. I still say that any minister or a man of responsibility entrusted with him is open to replacement by another one who is more capable of shouldering that responsibility. The basic reference in any decision of this type is the criteria of performance and level of fulfillment of plans for development projec ts.
By Al-Sharq al-Awsat Daily

Frankly, people outside the Emirates think there is a kind of sensitivity among the seven Emirates. With reference to the federal system adopted by the state, how do you respond to that?

I do not understand what you mean by “sensitivity” and the relation of the word to the federal system. But I know the reason behind your question: it is the media reports which tried, in handling the reflections of the international financial crisis on the UAE, to place hurdles and fabricate differences between Abu Dhabi and Dubai. These are vicious attempts that ignored the way the UAE faced the repercussions of the global financial crisis and the superb performance of our federal entities, under the leadership of His Highness, the President of the UAE. The performance was excellent, and it presented a new proof of the capability and power of the federation to face difficult challenges. Anyhow, since you brought the subject up, it is useful to remind everybody that the seven Emirates chose the federal system, realizing that it is the most viable system to survive and develop. The founding fathers had wisdom, vision and a future perspective. Whoever knows the history of the area and its situation prior to the establishment of the union will realize the great achievement of the union in the establishment of the UAE. If the results are the test, then look at the advance and achievements of the UAE20after 37 years of the Union. The UAE is a state of institutions governed by a constitution, which covers the allocation of responsibilities to local and federal authorities. Like all federal states, the Federal government is concerned with all the sovereign affairs, whether related to defense policy, the armed forces, national security, foreign policy, and financial policy, legislations related to justice, economy, labor or residence of foreigners.

Among the most important historic achievements we take pride in is the building of the national Emirati identity which did not exist before the rise of the Union state. This identity settles deep down in the souls of all Emiratis, runs in their blood-veins, and fills them with feelings of dignity and loyalty to their country, the UAE.

Every citizen and person of responsibility in the UAE puts his Emirati national sense of belonging above that of his own area. Basically there is no conflict, but integration, between the two. When a person introduces himself as coming from Abu Dhabi, Fujairah, or Dubai, he is not unlike an Egyptian who introduces himself as coming from Cairo, Asyut, or Alexandria, or a Saudi, who introduces himself as coming from Riyadh, Makkah, or Dammam.

Unfortunately, some people who do not know the Emirates and the facts of life there, pass judgment on what they do not understand. We are, in the words of my brother Sheikh Khalifa, members in one body, strong and held together. There are no sensitivities among the Emirates, but t here is mutual cooperation and help within the one state, the one national identity; and at the same time, within the one state there is room for competition in the fields of good deeds achievement, excellence, and the service of the country and citizens.
By Al-Sharq al-Awsat Daily

Do you support increasing the scope of the federal government's authorities while decreasing those of local governments towards the overall welfare of the UAE?

There is no conflict between the local and federal authorities. There are federal and local roles which are clearly articulated by the Constitution of the UAE. All sovereign issues fall within the jurisdiction of federal government, represented by His Highness, The President, Members of the UAE Supreme Council, The Cabinet, The Federal National Council, Federal Law.

The federal government enjoys full authority to carry out its mandate articulated by the Constitution. Extended or limited scope of authority is not a theoretical issue. Meanwhile, promoting non-central governmental models and offering more authorities to local governments is now a growing trend in different parts of the world, even in single region state. Decentralization has proven quite successful in handling development requirements, enhancing government performance and increasing productivity of public organizations.

In the UAE, we are very keen on ensuring complementary roles and responsibilities among ministries and federal authorities and20the local departments and establishments towards achieving highest government performance levels across the UAE.

By Al-Sharq al-Awsat Daily

In times of crises, Dubai always comes into the world's focus. Are you concerned by international reports highlighting Dubai's economic shortcomings during the global financial downturn?

We are completely aware of our capabilities and we don't overestimate our abilities. Dubai's success in introducing a unique developmental model has gained remarkable international recognition. As you know, success implies a certain burden that cannot be avoided. The international focus on Dubai is absolutely normal. During crises, people usually turn their attention to those who have proven a successful track record. The current crisis has brought Dubai's developmental model with all its successes into a tough test. Some have speculated that Dubai will fail this test, simply because they do not know the UAE nor what Dubai has achieved based on solid foundation of knowledge, expertise and business ties across the globe. Dubai's achievements are part of the UAE's remarkable progress. I know that some people from outside the region have wished that

Dubai model will go down the river. I am fully aware that some financial and economic circles were not happy with the progress we managed to achieve on various tracks including investment, aviation industry, IT and global competition in managing and financial markets.

The UAE has proven remarkable competency in addressing difficult questions imposed by the global financial crisis. I strongly believe it won't be long before international focus will shift from what is claimed to be Dubai's shortcomings to Dubai's and the UAE's overall success in passing this difficult test.
By Al-Sharq al-Awsat Daily

Almost a year ago, and during your visit to Asia, you warned against the global financial crisis. Why precautionary measures have not been undertaken to avoid negative impacts of this crisis on both Dubai and UAE?

The crisis have taken the whole world by surprise and evolved in tremendous pace. During my visit to Asia, I had warned against turmoil in financial and commodities markets, marginalizing the role of international financial institutions and potentials that these institutions fall short from fulfilling their expected roles in a world where all international markets became very much related, turning into one huge global market which does not follow any international rules, regulations or supervision.

I had urged leading world economies to move swiftly and reconsider roles and mechanisms of international financial establishments and institutions, especially the International Monetary Fund -- and that what exactly the G20 summit did last month earlier this month.

Regarding the precautionary measures, I believe that no preventive measures neither in the UAE or any other country in the world, would have provided the desired immunity from the ramifications of the global financial meltdown. The UAE's solid economic structure, efficient performing establishments, adoption of a balanced model of conservative banking policies overseen by the Federal Central Bank and liberal economic approach, were the key elements that enhanced the country's ability to survive the negative implications of the global crisis and prevented any case of bankruptcy in any of the country's banks or major corporations. The impact of the crisis on our economy was significant during the last quarter of 2008, yet it was not as harsh as on other major economies.
By Al-Sharq al-Awsat Daily

Despite Dubai government officials repeated rebuffs of bailing out some companies to Abu Dhabi, speculations in that regard have never stopped. Isn't normal for the Emirates to cooperate among themselves to overcome such difficult times?

Cooperation among the seven Emirates has never stopped and they don't wait for crises to show this cooperation. There are several joint ventures between Abu Dhabi and Dubai. Founders and stakeholders of most of the UAE Public Joint Stock companies are from Dubai and Abu Dhabi. Abu Dhabi investors have huge investments in Dubai and vice versa. Dubai has always welcomed business and investments from across the UAE.

Regarding the speculations you referred to in your question, they will always remain just speculations. I believe they are meant to be evil gossip as part of a vicious campaign against Dubai model. These speculations were not only refuted by Dubai government officials but also by His Highness the President of the UAE last March.
By Al-Sharq al-Awsat Daily

Do you believe that the UAE economy will contract this year? Or will it achieve certain

growth? And at what percent?

We are confident that our national establishments' abilities, combined with the economic measures undertaken by the government, will lead to economic growth this year. Yet, we expect that growth may not come at the same rate of pervious growth records we sustained over the past few years. While speculating global economic contraction of 0.5 percent, international financial bodies forecast a slight growth for the UAE economy. Other forecasts speculate a 3 percent growth for the UAE economy.
By Al-Sharq al-Awsat Daily

Maybe every cloud has a silver lining. The financial crisis has restored balance to the markets following years of inflation which posed a threat to Dubai's and the UAE's economies. Do you see this tough correction, for instance to the real estate market, a good solution to a problem that could have escalated in the future?

Sometimes opportunities are born from the wombs of crises. The most important thing is to focus on the future and develop appropriate frameworks that guarantee highest levels of performance on heels of the crisis. Measures undertaken by the government on both local and federal levels will ensure that we shall emerge from the global financial crisis with least damage. The UAE has proven remarkable ability in facing and overcoming previous crises. Specialized committees and task forces are closely monitoring the development of the global crisis and analyzing its impacts on our economy and subsequently propose action plans to resiliently cope with these ongoing changes.
By Al-Sharq al-Awsat Daily

Many rumors are targeting Dubai claiming it has turned into a ghost city and that tens of thousands are being laid off every week. Don't you feel upset about these rumors and the way the impact of the crisis has been perceived outside Dubai?

Actually, we don't pay attention to rumors and our response always comes in actions rather than words. As a matter of fact, Dubai visitors these days are surprised by these rumors and I've met with many of them recently and they expressed their amazement at Dubai's traffic jams, overbooked hotels and crowded markets.

Dubai's success -- which it has sustained over the past years -- is the true reason behind this type of mixed reports. Those who spread such rumors -- are they aware of the fact that global nature of Dubai makes it more sub ject to impacts of global changes than any other city? We totally endorse freedom of expression but we always urge responsible freedom that promotes principles of integrity and objectivity.

It is truly sad to find international publications that have usually boasted about factual and precise reporting issuing articles based on mere rumors and baseless speculations. We are fully aware of the hidden fierce global economic competition between different parties who are in the same line of business. When a city or a country decides to integrate itself as an effective international player, it should not expect an easy journey full of roses and good wishes.

Do you know how many major international airlines are closely monitoring Emirates' performance? Do you think that international port services companies are happy with the success accomplished by DP World in managing and operating dozens of ports around Europe, Asia and Africa? Do you expect international financial markets are pleased with Dubai Financial Market's success in its accusation of some of the world's most important financial markets in the world?

I will tell you more. Emirates Airlines' successful model has not led only to achieving an internationally recognition but also has induced the launch of other Arab airlines that followed the same model. Emirates has encouraged many established Arab airlines to enhance their fleets and upgrade their services. This has ultimately led to increasing Arab airlines' share of the in ternational travel market. Leading by example, Emirates has set new benchmarks for quality services not only regionally but also internationally. One can only gain world recognition by proving success and ability to take the initiative, yet this recognition may not necessarily reflect acceptance.
By Thabet Amin Awad of Al Ahram Egyptian newspaper

There is no doubt that good planning is one of the key factors behind the success of the UAE, backed by the close monitoring of the ongoing challenges and opportunities. In your plans, what are the challenges that you foresee? What is the country's level of readiness to address them?

Humans face challenges throughout their lives. Through commitment to proper planning of projects and programmes, and following up on their implementation, challenges can be successfully addressed. It is also crucial to anticipate challenges without ignoring any possibility. Yet, there are some unforeseen challenges that originate remotely but influence us -- as in the global financial crisis that erupted in the United States and spread to the economies of developed countries and the rest of the world. One must be prepared to effectively deal with the implications of such challenges to one's country, economy and security. We, in the UAE, are aware of the challenges that we face and are always prepared for the worst, and are also willing to face whatever unforeseen developments regardless of their magnitude and im pact.
By Thabet Amin Awad of Al Ahram Egyptian newspaper

You have always stressed that the main challenge facing the Arab world, is that of the development of human resources in the knowledge era. Do you believe that the current education systems are equipped to prepare a new generation that is able to face this challenge and How?

I am not in a position to assess the efficiency of the Arab educational institutions. But a common concern across the Arab world is the poor education systems at both school and university levels. The international rankings of the Arab universities are unsatisfactory to both the keen learners as well as the academic institutions.

Yes, the main challenge facing the Arab world is the challenge of human development in the era of knowledge. Without the development of strong education systems, we will not easily achieve the desired development. Despite the importance of the state's role in the development of education, the development effort is the responsibility of society as a whole; the State must lead these efforts and involve the broadest segments of society. Isn't strange that we approach the second decade of the third millennium with the average percentage of illiteracy in the Arab world more than 30 percent?
By Thabet Amin Awad of Al Ahram Egyptian newspaper

Amid the growing global crisis and in the latest G20=2 0summit, many were demanding a re-consideration of the global economic system, and declaring the failure the entire system of capitalism. Would the United Arab Emirates -- with its regional and international reach -- consider a new financial direction, such as the Islamic banking system as a substitute, even temporarily, to the current global economic system – which is currently deteriorating?

The United Arab Emirates, on its own or through the GCC, the Arab League and the specialized international institutions, plays an integral role on this front. The capitalist system did not fail. What has failed is the excessive economic liberalism, which pushed to minimize the intervention of the regulatory government institutions in the markets and banks' activities.

Certainly the world is witnessing the birth of a new economic and financial order. The results of the G20 summit are a prelude toward this end. However, consensus on the format and the content of this new global economic system would not be reached soon. Different factors determine the future of this system, including growing global competition and conflicting national economic interests. No party would easily give up its position and gains for the benefit of the global economy recovery.

As for the suggestion on the Islamic banking, it is of interest to the global banking sector. However, to be a substitute to the current economic systems, even if only temporarily, is a much more complex approach, which relates to the nature of economic systems, the size of the economies of nations, and the size of Islamic banks in the banking sector worldwide. As you are aware, there are a lot of factors that govern this, such as the distribution of the economic, military, scientific and social powers in the world, as well as the competitive nature of civilizations, and the strong links between the civilizations and religions.
By Thabet Amin Awad of Al Ahram Egyptian newspaper

There are many other positive aspects of the global financial crisis which were embodied in refining the current competencies, reviewing the need for expatriate expertise, and strengthening the bonds of the federal entities that supported the UAE. In your opinion, what are the lessons learned from this crisis both on the local and federal level?

There are many lessons to be learned from the crisis, the most important one being the assertion of the state's role in regulating and monitoring the overall economy and markets, and confirming the fact of the global economy's unity, in addition to the unification of the global market. The widening scope of the crisis, which includes all parts of the world, confirms this unity and the common international pursuit. In addition, President Obama's public statement, which verifies that the United States cannot overcome the global crisis on its own, is further confirmation of the unity of the economy and the market. Other lessons learned from the=2 0crisis is realizing the urgent need to develop the regulations, terms of reference and working mechanisms of international financial institutions to be commensurate with the unified markets and economies, and the involvement of many influential players.

In the United Arab Emirates, we perform a wide range of reviews through specialized federal and local committees which are well aware that within the challenges of the crisis, remain many opportunities. The first opportunity to be seized is to benefit from the lessons learned from the crisis, and be prepared to deal efficiently with the world after the crisis; a world completely different than what it was before. As for the forces of federal entities, the fact is that the strength of these entities is what enabled them to cope with the crisis and contain its negative effects.
By Thabet Amin Awad of Al Ahram Egyptian newspaper

You have said that "our vision is clear, our goals are obvious, our strengths are great, our will is strong and we are ready. We want Dubai to be a global center of excellence, creativity and leadership, and we are able to achieve excellence, creativity and leadership." Do you still stand by your vision? If yes, how so?

Yes, we still stand by it. Plans, programs and projects may alter, but the vision does not change. We want the UAE and Dubai to be a global center of excellence, innovation and leadership, and we are indeed on the

rightful=2 0road. You ask how? I tell you: the global financial crisis is a challenge we have faced and surpassed in its most difficult stages. We are insistent on developing the education and obtaining excellence in all our projects and our work, in addition to protecting our favorable environment for innovation and leadership. What we have achieved over the past 10 years is characterized with excellence and leadership, and we are capable and determined to achieve what is more excellent, innovative and prominent in the future.
AL ITTIHAD

Your Highness, you asked the Ministry of Finance last year to prepare the federal budget of the State 2009. The early announcement prior to the global economic crisis has resulted in a deficit-free budget. Would the global crisis have implications on the 2010 budget, particularly with regard to the basic needs of Emirati citizens?

In the last three years, the federal budget was issued early and before entering the new fiscal year. The submission of the budget for 2009 without a deficit is because its main provisions have not been affected by the global financial crisis. I also do not think that 2010 budget will be affected. We still have seven months for the year to end, and in my opinion this is quite a long period -- we may see by the end of it some positive indicators that would help in accelerating the recovery of the global economy.
AL ITTIHAD

There are those who say that the senior positions in Dubai are granted to a few selected people, which is described as the phenomenon of the "Super Man." How would you comment on this?

My answer is that all positions are available to competent Emiratis and we are very keen on rejuvenating our system. The “Super Man” phenomenon that you are talking about does not exist in our organizations and institutions. I am aware of those reports but would invite you and others to conduct a search within those senior positions to discover the truth on your own.
AL ITTIHAD

In light of the global crisis some companies announced the postponement and rescheduling of some projects. What is the status of the infrastructure projects undertaken by the government subsequent to the changes in the strategic plans?

We will continue working on the infrastructure projects without any delay. What is currently under implementation will be completed, while we will re-schedule the new projects. The changes of the strategic plan will be announced as soon as the committee finishes reviewing them. Plans are always subject to change in normal times and in times of crisis.
By Al-Khaleej Daily

Despite the competitive investment environment enjoyed by the UAE, with its advanced regional advantages, there are some aspects of the legislative environment that do not quite match the levels of development and state of the national economy. Do we expect any updating of the present laws, soon?

The economy is like a living being, whose demands and needs change with constant growth and development.

Though we realize this fact, the Council of Ministers has lately decided to establish the Emirates Council for Competitiveness. Its task is to develop strategies and suggest policies and legal frameworks that can support the competitive environment in the light of local, regional and international variables. These frameworks serve the objective of comprehensive development, and protect the Emirates position among the most competitive states on the international arena.

The Council consists of a number of ministers concerned with this question. It is headed by the Minister for Cabinet Affairs, and includes the Ministers of Economy and Foreign Trade, Education, Labor, Health, the Minister of State for Foreign Affairs, and for Financial Affairs. In addition, there are seven representatives of administrative boards in the local governments, the chairman of the Union of Trade and Industry Chambers in the State, Directors of Trade and Industry Chambers in Abu Dhabi and Dubai. We are confident that the Council is able to draw strategies and legislative frames to secure the desired development of the competitive capacity of the UAE.
By Ro’ya Al Iqtesadiah newspaper

In the first quarter of this year, accelerating economic events have generated pessimism about the future of the global economy and its growth. There are conflicting reports in the assessment of the national economy, and we read some of the studies questioning the continuation of Western-style development plans and their future in the region in light of declining oil prices and the global crisis. What is the assessment of Your Highness on the national economy today, can it be maintained at the level of growth in the light of the retreat of oil prices? What is the policy that the UAE will use with regard to the latest developments of the global financial crisis?

Our economy is strong and its potential lies in its great diversity. The proportion of oil in the UAE’s GDP is less than 30 percent, and this reduces the impact of oil price fluctuations on the national economy. I agree with you regarding the presence of many pessimistic reports on the world economy, but it’s an exaggerated and unrealistic pessimism. Countries with the largest economies are seriously committed to rehabilitating the economy, while the summit of the Group of Twenty came out with encouraging results after meeting in London recently. Our hope is to commit ourselves to the implementation of all decisions. In fact, the negative vibrations will decrease, and will be substituted by cautious optimism. As for the levels of growth, few states in the world are likely to maintain high levels of growth recorded in recent years. We in the UAE will achieve economic growth rates lower than those recorded in previous years.
By Ro’ya Al Iqtesadiah newspaper

Attracting foreign investment was among the priorities of the UAE. Today, the "flight of foreign investors" from the UAE is widely discussed in the media, and is supported by both local and official reports. Does Your Highness really think that our national economy’s dependence on foreign investment leads to future risks? In the frequent talk about the global financial crisis, does Your Highness have new plans to strengthen, develop or restore foreign investments to the country?

We cannot use the term "flight of foreign investors" because there has been no “flight.” What happened exactly is the drought of liquidity across the world immediately after the collapse of the American investment bank, Lehman Brothers, which marked the beginning of the global financial crisis. However, with this drought, the compilation of available sources of liquidity became the primary concern of investors, banks, and financial institutions throughout the world. Sizeable withdrawals, deposits and liquefaction of all financial centers occurred in the capital markets in the world.

With regard to your point that the attraction of foreign investment has been among the priorities of economic mobility in the UAE; it is an inaccurate assumption. Investment plans have no limits or boundaries. There are foreign investments in the UAE, and the=2 0UAE in its turn has countless investments in many regions of the world. Investments imply promising opportunities in a favorable environment. This is what attracted foreign investment to the UAE, and the investment environment remains favorable in the UAE; the opportunities are still promising, and the UAE is still the most important regional center for business and international trade. Today, it is more promising than ever before, and the advent of smart investors to the UAE has not stopped.
By Ro'ya Al Iqtesadiah newspaper

"Security and profit" are two very important concepts for the investor, and it is known that the UAE has been a breeding ground for the development of capital in recent years. This was reflected on the arrival of the most prominent businessmen, major companies and famous brands to the country. The active UAE financial market contributed to the success of many companies, which turned into public joint stock companies, with billions of dirhams having been pumped into their capital. This means that thousands of investors were involved in the ownership of shares. Recently, however, we have witnessed legal and financial issues involving prominent names of UAE nationals. What does Your Highness have to say with regard to the investment community in the UAE on the capacity of governmental oversight of corporate governance and management of the shareholders and their rights?

These legal issues are evidence of firm government20concern about good corporate governance and its commitment to sound accounting principles, rules of governance and transparency. The government is constantly working to develop bodies, procedures and safeguards. No one is above the law in the UAE, and whoever crosses the line will be sought by judicial authorities and legally tried.
By Ro'ya Al Iqtesadiah newspaper

In light of the talk about the scarcity of liquidity in the domestic market, Dubai US$20 billion in bonds. Central Bank is subscribing to $10 billion of those bonds. Officials of the Emirate stated that there is no current need for the rest of the money. Does this mean that the Government of Dubai has closed the doors for new subscription to a second tranche? Will support be provided by the Government of Dubai for the companies as a grant?

The doors to subscription have not been shut down. The subscriptions so far meet our requirements. The support given to companies is not a grant, because its origin is the bill, and companies possess productive assets that enable them to meet all the requirements. The problem of these companies is part of the liquidity problem that has afflicted the financial system and banking world.
By Ro'ya Al Iqtesadiah newspaper

Looking at the entities that will avail from Dubai government's financial support, can we say that Dubai government affiliate companies have overestimated their financial capabilities to cover development requirements, then subsequently their administrations became responsible for the level of these companies' transparency in handling their projects?

The global financial crisis took all countries by surprise and was much bigger than any economy or large companies across the world. It is not really helpful for anyone to claim wisdom in hindsight. Learning the lesson well is the true bottom line of this crisis. I have always repeated that only the one who works is one who is likely to commit errors. But the most important thing is to learn not to repeat the same error twice. Definitely gaps that may be revealed through current reform efforts will be immediately addressed and rectified.
By Ro'ya Al Iqtesadiah newspaper

Your Highness, you have put Emiratization on top of the country's development priorities. Over the years, the UAE population has grown significantly to the extent that expat residents have become absolute majority. Meanwhile, number of private sector companies has significantly increased as well. How do you see this impacting the UAE nationals' job opportunities? Do you believe it might be necessary to expand the Emiratization plan to cover a larger portion of the private sector companies?

The Emiratization plan is primarily based on training and qualifying UAE nationals, equipping them with all necessary tools and competencies a nd supporting them to confidently compete in the job market. I am positive that most of the private sector companies prefer to recruit UAE nationals as part of their Corporate Social Responsibilities. Also salaries of UAE nationals – however high they may appear to be - are far less than those of expats. Employing a UAE national will open the door for more interaction with government departments and local customers, who are eventually the highest spenders. If some companies fall short of their responsibilities toward the local workforce, then the government will intervene through a set of measures and incentives to encourage these companies to live up to the expected level of responsibility.
By Ro'ya Al Iqtesadiah newspaper

Many countries have applauded the UAE's hospitality and praised the level of respect it shows to the expat communities and the freedom it offers them to lead their business and social lives in perfect ease. This encouraged many expats to reside in the UAE for long period of time, evolving the same habits and traditions of the local community as well as significant loyalty to this country. Some of those expats felt optimistic about recent announcements made by some real estate companies that property buyers in certain projects in Dubai or Ajman will be offered "permanent UAE residency." Other companies have completely closed the door of speculation regarding the same issue. How does the government perceive=2 0the "Permanent Residency" promise? And are there any eventual plans to adopt it in the UAE?

Offering residency is absolutely far beyond the jurisdiction of any real estate company. It is a sovereign issue governed by laws and regulations. But I wonder if one buys property in London, Paris, Cairo, or Beirut does this mean obtaining a permanent residency there? We are very keen to ensure convenient conditions for expat property owners. However, we will be issuing a new law that includes a long multi-visit permit soon.
DALAL ABU GHAZALA, Al Hayat Newspaper

The UAE has proven remarkable capability in managing previous crises, including the Gulf First or Second Wars and 9/11 events in the US. What are the steps endorsed by the country's supreme leadership to overcome the current financial crisis? And do these measures include re-evaluating the UAE's strategy and its plans for the coming few years?

Revisiting and re-evaluating strategies and plans are ongoing processes. They aren't only restricted to times of crises. Life is full of changes and developments, but only the clear-headed can effectively monitor and examine these changes and identify their trends and then determine how much these developments will impact their own strategies and plans.
DALAL ABU GHAZALA, Al Hayat Newspaper

Some Western media are trying to defame the UA E either through exaggerating the impact of the economic downturn on Dubai, or through inaccurate reports such as Human Rights Watch's on the Media Law in the UAE. What do you think are the reasons behind such campaigns? And what is your response to these campaigns?

We don't care who stands behind such campaigns, but rather pay attention to the content of these reports either issued by media or international nongovernmental organizations. We deal with such reports with absolute objectivity -- for example when producers of these reports express their wish to visit the UAE and meet concerned officials, we open our doors for them and welcome all constructive discussions, offering them full briefings on all facts. We attentively listen to their views and, I like to think, so do they.

Regarding Human Rights Watch's report on the UAE's new draft media law, the international organisation's officials were in the country last week. They met with the concerned UAE officials who defended the law and disputed the report's inaccurate remarks, explaining the law's different clauses and articles. They tried to steer the report's producers away from any misleading interpretations of its content.
PAUL STOBER, Gulf News

The government has taken significant steps to support the financial services and property industries in the UAE. Are you happy with the results so far?

I am very pleased with the results, and I am confident we are on the right track. Everybody will recognise shortly the encouraging indicators of the economic recovery.
PAUL STOBER, Gulf News

If it became necessary, what further steps of support would the government consider for the financial services and property industries? Would the government consider extending support to other important industries in the UAE, like tourism? If so, what form might this take?

The measures we have undertaken so far have shifted the UAE economy from the crisis mood to the solution mood. Not one country in the world, regardless of what efficient systems it boasts, could have ensured recovery from the financial crisis before recognising its actual impact on the global economy and international markets. No one could predict ensuring recovery before the world's leading economies consolidates their efforts to face the crisis. That actually took several months of constant work. Now, optimistic voices are getting louder worldwide, while markets' fear has started to gradually diminish.

The UAE has one of the region's most progressive, vibrant and open economies. Efforts by world leading economies to deal with the financial crisis have been effective and fruitful, while the tendency to increase international cooperation – including recent decisions by the G20 summit in London – remains very positive and encouraging. I can confidently say that the UA E is very well positioned on the recovery path, thanks to our domestic policy measures – such as the fiscal stimulus, easing monetary policy, and increasing liquidity in the system. There are some early indicators of international economic recovery. Yet, I cannot predict that the global economic recovery will proceed without potential hurdles. I cannot also claim that repercussions of the economic financial meltdown are over yet. But what I can say is that the worst is already behind us, and there is now a solid will and determination among concerned countries to join hands to collectively revive the global economy as well as their own individual economies.

Increasing financial support to other business sectors is probable, pending the actual needs of each particular sector. The UAE's tourism sector is in a good shape, with UAE hotels recording high occupancy rates. The country's tourism industry has already successful survived the worst period and resiliently adapted itself during the most critical times.
PAUL STOBER, Gulf News

What are the main strengths and weaknesses of the UAE, as it faces the challenge of the global economic slowdown? What are the particular challenges that Dubai faces as it positions itself as a global business centre?

The UAE's strengths are numerous. The UAE's success in facing the global financial crisis and alleviating its impact on the Emirati economy is the most conspicuous=2 0evidence of these strengths. The country enjoys a leading ranking position in several fields such as productivity, environment, connectivity, and transformation to knowledge economy. Yet the failure to match best international practices in these fields might be considered a major weakness. We always benchmark ourselves against the best. I always say that we have just embarked on a long journey of hard work to fulfil our promised sustainable development through a series of strategic projects to be established during the years to come.
DURAID AL BAIK, Gulf News:

Do you feel that Dubai needs an efficient auditing body to investigate and curb corruption in financial institutions before things become too bad? How more the UAE can move faster in fighting corruption and promoting transparency?

There is already a government financial audit department. The department has a track record of successful performance, and it has done very well with investigations related to corruption cases. Enhancing financial auditing systems and capabilities is undoubtedly important and that is exactly what we are doing now. As for promoting transparency in fighting corruption, I confirm that the UAE is completely committed to highest levels of transparency. There is no room for corrupt officials and citizens among us. Handling corruption cases does not mean prosecuting judging and penalising corrupt individuals only; it also aims at filling all administrative and legal loopholes that=2 0have been used to breach the law.
By Al Bayan newspaper

When will the term "remote" (rural) areas disappear from the everyday vocabulary of the UAE?

The UAE does not have remote areas in the negative connotation of the word. We only have areas that are relatively remote from urban centers. The urban planning of these areas has to be based on scientific research to carefully identify means of providing best efficient services to local residents.

There are sometimes exaggerated reports depicting these areas as if they are utterly deprived of basic services while their residents live in appalling conditions. Sometimes, one reads press reports demanding a school to be built in an area that has no more than 50 homes, while there is a school only few kilometers away with available means of transportation for the students.

I've personally toured most of these areas across the country, and I was very keen on visiting particular areas and schools that were the focus of the media. I discovered that the situation on ground is often completely different from the picture presented by the media. Of course, these areas need to be given more attention -- and this is exactly what the government has committed itself to since its first day in office. The government efforts in that regard are in line with the directives of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE.
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By Al Bayan newspaper

Are there any practical measures undertaken by the government to address the issue of the population imbalance? What about offering incentives to the UAE nationals to have more children?

The government has embarked on certain measures which have been announced earlier and carried by the media. The committee in charge of the population issues is working quietly and in a very effective manner. The UAE Government Strategy has identified a major direction for developing particular steps to address the population imbalance issue. One of the strategies the UAE government has identified to address this issue involves focusing on Emiratization through well-planned policy based on combining federal and local efforts. Incentives for the UAE nationals to have more children are already in place. UAE nationals are offered several incentives either in terms of services, benefits, salary increments or other privileges for their children. The UAE government has paid special attention to offering UAE nationals all possible incentives.
By Al Bayan newspaper

Why have the UAE Government retreats been stopped?

The UAE Government retreats have not been put on hold but they are usually organized with relatively long intervals. Yet, the Cabinet meetings are convened on regular basis.
By Al Bayan newspaper

Some peop le believe that you put more trust in youth rather than veterans to lead Dubai organizations. What is your comment on this view?

I've trusted, and I will continue to trust well-qualified and experienced youth. If youth are not empowered and given full opportunities, how expertise and new leaderships will be built?

In the meantime, I don't know which age signifies youth. Are they below the age of 35 or 40? If a person who has spent 10 or 20 years in his/her workplace and still has not developed any experience, can he/she be categorized as youth? How many years one should spend at work to gain experience -- should we say 5 or 10?

The world has changed. Knowledge is now accessible to everybody. Training and development programmes are also available for those who seek to develop themselves and opt to enhance their competencies to ensure successful future career path. Young leaders' development programmes are also available for all UAE nationals who prove themselves worthy through tests carried out by an independent body.

We look high at our national expertise, both young and veteran. I will continue to explore and discover young talent and offer them full opportunities and push them to assume leading positions.

By Al Bayan newspaper

How do you foresee the impact of the unified GGC currency on UAE's economy?

It will have a positive impact on all GCC countries economies. The currency is a federal issue, and the UAE has been very enthusiastic about the unified currency and showed interest in hosting the GCC Central Bank.
By Al Bayan newspaper

How do you evaluate the experience of the women whom you empowered to assume administrative and legislative roles in the UAE?

The experience has been very successful and most of those women have demonstrated remarkable commitment and significant competency in performing their duties and fulfilling their responsibilities. They have also proven that the UAE woman is completely reliable and worthy of trust in all leadership and non-leadership positions.
By Al Bayan newspaper

What was the response of the UAE health authorities following your direct criticism of doctors' professional competencies and your urging that medical services across the country be enhanced?

There has been remarkable progress in quality of health care services, which still fall short of our expectations. I totally appreciate that pulling together loose ends to rectify mixed processes accumulated over long years takes time. Yet, efforts are now underway to develop the healthcare sector and work is progressing in the right direction. Competition resulting from the growing presence of private healthcare organizations has reflected positively on the overall medical performance in the country. I believe all private=2 0and public sector doctors will live up to international best practices very soon.
Emirates Business 24/7

There has been increasing federalism in the handling of the financial needs of the Emirates, which has been hailed as a good step forward. How do you see this evolving in future?

The UAE follows unified legislative, financial and fiscal systems. Federal authorities, led by the UAE Central Bank and the Ministry of Finance, assume full responsibility of developing and implementing these systems. Measures adopted by the UAE government in response to the global financial crisis only reflect conditions of the UAE market, which has been around for the last 35 years since the Fiscal Council was first established. The UAE government's swift action to address impacts of the global financial crisis has amazed many people. It is important to remember that the UAE's response to previous crises, such as the real-estate crisis of the early 1980s, has always been carried out at the federal level. The increased federalism that you refer to in your question is yet another proof that the federation is getting stronger.
Emirates Business 24/7

Many laws including the Federal Companies Law have been under scrutiny for a long time. Do you feel there is a need for faster amendments to federal laws to meet today's economic and social needs of the country?

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Issuing the first amendment of a law usually takes some time. Rushing things may lead to undesired consequences while delay reflects unnecessary bureaucracy. The pace of passing new amendments to laws bound by international agreements and world systems – for example, the Companies Law -- is determined by the progress of these agreements. Several important international agreements, including a significant number involving the World Trade Organization, are still not ripe. Yet, we are very keen on passing or amending any laws if necessary to strike a healthy balance between our local interests and our commitments to international trade and finance organizations.
Emirates Business 24/7

Speculation about the dirham's peg to the United States dollar keep flowing back out. What value do you see in keeping the peg in the sh ort term and the long term? Is there any move to change the structure or composition of the peg?

Governed by strict banking principles and guidelines, the UAE Central Bank is taking care of the issue of dirham's peg to international currencies. The US dollar's devaluation against the Euro and the pound-sterling during the past few years has triggered several debates about economic threats posed by the dirham's peg to the dollar. Today, after the dollar's significant gains against other international currencies, we can barely hear these voices.

There are no absolute wins or absolute20loses to pegging a local currency to a single foreign currency or a currency basket. Decisions are always determined in light of the size of benefits.
Emirates Business 24/7

One of the many effective measures taken by the UAE Government to deal with the fallout of the global financial crisis has been to maintain or increase spending on infrastructure projects, even if this leads to a deficit budget. Would the UAE be comfortable with a deficit budget for the first time in many years? Would you immediately put in place measures to wipe out the deficit (if that happens) in the next year? What such measures would you consider?

This is a hypothetical question. Actually, we evaluate all possible scenarios and we are very keen on endorsing a deficit-free budget. Yet I can read between the lines of your question about potential measures to face budget deficit. My reply is: No Income Taxes.
Emirates Business 24/7

The public relations image of UAE and Dubai is being taken to task in sections of the Western press. What is the official strategy of UAE going to be to counter this?

Our strategy in that regard is very consistent, as we strongly believe in the sanctity of truth. Our commitment to transparency is unequivocal and unquestioned. Our ultimate response to these reports can be seen in our relentless efforts and ongoing success. The life sp an of lies is always short.

We have been very transparent with all measures undertaken over the past few months to counter the impact of the global financial crisis. Senior government officials have spoken openly about the current situation, highlighting key facts and figures -- including the actual size of the debts by both the government and government affiliated companies.

His Highness the President of the UAE has also openly clarified different dimensions of the crisis's impact on the UAE economy. Despite all that, some people in the media have continued to weave rumors and negative speculation into their articles. We welcome all media from around the globe and we have never silenced any resident or visiting reporters or stopped them from doing their job.

We shall continue to do the same because of our confidence in ourselves, our economy and our measures -- and because we always believe deep in our hearts that truth prevails. Yet our self-confidence does not stop us from dialogue with the media to offer them straightforward information. We urge them to adhere to professional integrity, objectivity, and fair scrutiny and use of information.
Emirates Business 24/7

There has been some contraction in business volumes in the UAE over the last few months. The harshest effect of this seems to have been on small and medium-sized enterprises. Is there any plan to revitalize the small business sector, which is usually co nsidered the growth engine of an economy?

We are fully aware of the vital role of the small and medium enterprises sector; I believe that the contraction it has suffered is only temporary. Our success in overcoming the worst will positively reflect on the overall economy, including major enterprises as well as small and medium-sized ones. Our position is far better than other countries, and encouraging economic indicators have just started to emerge. Enhanced liquidity levels across the banking sector, banks' resumption of credit operations, increased number of investors eager to seize investment opportunities in the real estate sector and financial markets, are among many other positive and encouraging indicators.
Emirates Business 24/7

The region is clearly looking at nuclear energy as means to meet its energy needs in the future. What is your view on the proliferation of nuclear technology in the Middle East?

The UAE's announced stance is very clear: All countries have the right to use nuclear power for peaceful purposes. We look forward for the day when the entire Middle East region will be declared free of all nuclear and mass-destruction weapons.
By Ali Mutalq Al-Quhais Al-Shammari - AlReyadh Newspaper

What comments do, Your Highness have about the rumors that Your Highness had a health problem lately? We pray God that the rumors were base less, and that He may grant Your Highness good health, long life and happiness to make Your Highness a model to be followed in the region.

I thank God that I am well and in the best of health and peace of mind and soul. The rumors about me are a part of the psychological war that was waged on Dubai in recent months. Rumors have never targeted unsuccessful, backward or marginal people. I personally pay no attention to rumors, as I know they are short -lived. When people find out the facts, they respect and appreciate you more; their good feelings toward you grow, and the rumor-mongers diminish in their eyes. In fact the last few months I have participated in 4 endurance races where I was able to race for more than 120km in each.
By Ali Mutalq Al-Quhais Al-Shammari - AlReyadh Newspaper

By the end of the first quarter of 2009, what is your evaluation of the economic

performance of the UAE in light of the financial crisis? What is the UAE government's strategy to raise the national economy, and emerge from the financial crisis stronger than before? How do you respond to the unfair and hateful rumors that Dubai has turned into a ghost city?

The performance of our economy in the first quarter of this year proves that we are on the way out of the crisis, and that we are on the right track. Our economy will resume its health faster than other economies, but the speed of that=2 0resumption is not governed only by the strength of our economy and its abundant resources. The speed will also be influenced by developments in the international economy – including the measures of revival in the grouping of industrialized states known as the G-20, whose role in international trade movement is about 90 percent of the total international trade, and whose GDP is about 60 percent of the entire world GDP. The speed of general recovery will also be influenced by the capability of international measures connected with monitoring markets, and the role, functions and work mechanisms of international financial institutions, especially the International Monetary Fund. I am optimistic that good implementation of the decisions of G-20 and the International Monetary Fund will speed up the recovery of the global economy.
By Ali Mutalq Al-Quhais Al-Shammari - AlReyadh Newspaper

Sometime ago, several Western papers published unfair reports about the UAE, claiming human right violations of foreign labor in the UAE, and the lack of free elections in the UAE, etc. What do you think of these allegations? What do you think is the reason behind spreading such malicious reports?

They may write whatever they like, and play the tunes that please them. We are not annoyed by criticism, nor do we fear campaigns. They have their models, experience, values, standards, their cultural and intellectual frames of references. We have our models, values, standards and frames of references. We are open to the entire human experience in every field. We learn from them, but we will never import ready-made models. We do not accept that, and our society does not accept this. As for the allegations about foreign labor, it is an old theme, repeated every now and then. Yes, certain sectors of foreign labor are not in the state we like or hope. But we are steadily improving that state, and we are making progress every year. For years, the talk about foreign labor has not ceased. Such talk is open to all and to the countries that provide such labor. Despite that, millions are trying to come to work in our country. So, why do those foreign countries don't stop their citizens from coming to work in the UAE if the work situation is such as these nasty reports claim?
By Al Emarat Al Youm

The UAE is facing a regional and global media campaign that questions its ability to overcome the global financial crisis. How does Your Highness evaluate such campaigns? What are the tools and the initiatives with which to respond, including the development of local media?

Action is louder than words. Our achievements and hard work would be the response to these campaigns. The UAE is immune to such campaigns, and questioning of its ability to continue developing a strong federation is not going to yield anything. When we established the UAE federation, we faced analysis and speculation campaigns, questioning our ability to sustain the Federation and ensure its success. Similarly, the launch of every major project was met with uncertainty and rumors from media campaigns. All these campaigns are history now and their promoters have been proven to be wrong.

As for your suggestion of responding to these campaigns with tools and initiatives, including the development of local media, our response is to continue on our path of hard work and to highlight our achievements. Ongoing development has always and will remain a key objective to our local media; however, we will not allow anyone to drag us to media confrontations. Our policies and procedures are clear, transparent, and always in the end, truth will prevail and will defeat all rumors.

Al Emarat Al Youm:

The UAE government has taken notable measures in combating corruption, referring senior officials to court. Are there further steps the government intends to undertake in the same regards? And does Your Highness believe that an independent watchdog body might be needed to audit governmental and semi-governmental organizations?

The UAE has efficient independent watchdog bodies that include the federal State Audit Institution, as well as local auditing departments. I've visited the State Audit Institution lately where I was updated on its activities. I've given directives to revamp its systems and provide all necessary tools to enhance its performance. Sy stems and processes of the Dubai Financial Audit Department are also being reviewed and enhanced. Besides, there are other auditing bodies that operate under the Rulers' Courts across the seven Emirates.
Al Emarat Al Youm:

Your Highness received His Highness Sheikh Khalifa bin Zayed Al Nahyan, the President of the UAE, in Dubai last week, and escorted His Highness on a tour that included key landmark developments across the Emirate. What was the significance of this visit?

I meet with His Highness Sheikh Khalifa on regular basis. We are companions on our journey of development, and he is our Leader and our President. Dubai is his home and he is most welcome at anytime. The visit comes in line with His Highness' ongoing follow up on development efforts across the seven Emirates. He is always keen on meeting his people across the country to listen to their views and ensure their own welfare.

As a matter of fact, all His Highness visits to Dubai are important. His latest visit was significantly important as he toured Dubai's new landmarks, expressing his satisfaction at Dubai's milestone achievements. He was also very keen on visiting "Dar Al Ittihad" (the Union House) where establishment of the United Arab Emirates federation was proclaimed. The visit was in honor of this remarkable achievement.
Questions by Al Shorouk Egyptian Daily

Arab funds, particularly GCC ones, have suffered big investment losses in international markets due to the global financial crisis. Sovereign Arab funds have also lost a lot of their money. How did the UAE benefit from this tough lesson, and does it intend to direct more money into Arab markets? Are there any plans to direct part of this money into Egypt

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[Message clipped]

The
Shimon Post
Presidential Press Bulletin

8 May, 2011

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Article 1.

NYT

End of Mideast Wholesale

Thomas L. Friedman

May 7, 2011 -- If you look into the different "shop" windows across the Middle East, it is increasingly apparent that the Arab uprisings are bringing to a close the era of "Middle East Wholesale" and ushering in the era of "Middle East Retail." Everyone is going to have to pay more for their stability. Let's start with Israel. For the last 30 years, Israel enjoyed peace with Egypt wholesale — by having peace with just one man, Hosni Mubarak. That sale is over. Today, post-Mubarak, to sustain the peace treaty with Egypt in any kind of stable manner, Israel is going to have to pay retail. It is going to have to make peace with 85 million Egyptians. The days in which one phone call by Israel to Mubarak could shut down any crisis in relations are over.

Amr Moussa, the outgoing head of the Arab League and the front-runner in polls to succeed Mubarak as president when Egypt holds elections in November, just made that clear in an interview with The Wall Street Journal. Regarding Israel, Moussa said: “Mubarak had a certain policy. It was his own policy, and I don’t think we have to follow this. We want to be a friend of Israel, but it has to have two parties. It is not on Egypt to be a friend. Israel has to be a friend, too.”

Moussa owes a great deal of his popularity in Egypt to his tough approach to Israel. I hope he has a broader vision. It is noteworthy that in the decade he led the Arab League, he spent a great deal of time jousting with Israel and did virtually nothing to either highlight or deal with the conclusions of the 2002 U.N. Arab Human Development Report — produced by a group of Arab scholars led by an Egyptian — that said the Arab people are suffering from three huge deficits: a deficit of freedom, a deficit of knowledge and deficit of women’s empowerment.

The current Israeli government, however, shows little sign of being prepared for peace retail. I can’t say with any certainty that Israel has a Palestinian partner for a secure peace so that Israel can end its occupation of the West Bank. But I can say with 100 percent certainty that Israel has a huge interest in going out of its way to test that possibility. The Arab world is going through a tumultuous transition to a still uncertain destination. Israel needs to do all it can to get out of their story, because it is going to be a wild ride.

Alas, though, the main strategy of Iran, Syria, Hezbollah and Hamas will be to drag Israel into the Arab story — as a way of deflecting attention away from how these anti-democratic regimes are repressing their own people and to further delegitimize Israel, by making sure it remains a permanent occupier of Palestinians in the West Bank.

Have no illusions: The main goal of the rejectionists today is to lock Israel into the West Bank — so the world would denounce it as some kind of Jewish apartheid state, with a Jewish minority permanently ruling a Palestinian majority, when you combine Israel's Arabs and the West Bank Arabs. With a more democratic Arab world, where everyone can vote, that would be a disaster for Israel. It may be unavoidable, but it would be insane for Israel to make it so by failing to aggressively pursue a secure withdrawal option.

The second group that will have to pay retail for stability is the Arab monarchies — Saudi Arabia, Bahrain, Kuwait, Jordan, Morocco. These governments have for decades bought stability with reform wholesale — by offering faux reforms, like reshuffling cabinets, that never amounted to real power sharing — and by distracting their people with shiny objects. But these monarchies totally underestimate the depth of what has erupted in their region: a profound quest for personal dignity, justice and freedom that is not going away. They will have to share more power.

The third group I hope will have to pay retail is Egypt's Muslim Brotherhood. Under Mubarak, in an odd way, the Brotherhood had it easy. Mubarak made sure that no authentic, legitimate, progressive, modern Egyptian party could emerge between himself and the Muslim Brotherhood. That way, Mubarak could come to Washington once a year and tell the president: "Look, it's either me or the Muslim Brotherhood. We have no independent, secular moderates."

Therefore, to get its votes, all the Muslim Brotherhood had to say was that "Mubarak is a Zionist" and "Islam is the answer." It didn't have to think hard about jobs, economics or globalization. It got its support wholesale — by simply being the only authentic vehicle for protest against the regime. Now the Muslim Brotherhood is going to have to get its votes retail — I hope.

This is the key question: Will a united, legitimate, authentic, progressive, modern, nationalist alternative to the Muslim Brotherhood get its act together and challenge the Islamists in the Egyptian elections, and then rule effectively? Woody Allen famously pointed out that 80 percent of life is showing up. Wrong. Eighty percent of life is getting stuff done. The Egyptian centrists from Tahrir Square now need to show that they can form parties to get good stuff done. Nobody pays wholesale anymore.

Article 2.

Le Monde diplomatique

Is This the End of the Assad Dynasty?

Patrick Seale

2011-05-06 -- The disturbances started in mid-March in Daraa, a southern city on the border with Jordan, when a dozen children were manhandled, arrested and carried off to Damascus for scribbling hostile graffiti on a wall. Distraught parents came down into the street to vent their anger at such heavy-handed brutality. They were soon joined by others. The uprising had begun and soon spread across the country. No doubt it was inspired, in part at least, by the display of people power which has leapt with contagious speed from one country to another, shaking the foundations of Arab autocracy and giving a great jolt to the immobile political order in the Middle East.

In Syria, the authorities then made what may prove to be a fatal mistake. In a move that looked like panic, the security forces used live fire against the protesters -- and have continued to do so. By the end of April, over 550 people had been killed in different locations around the country, while many more were wounded and possibly two thousand arrested. With little reliable information coming out of Syria it is impossible to be certain of the figures. The state used particular violence against Daraa, a poor city in an agricultural region which has suffered from government neglect and crippling drought in recent years. As if to punish it for initiating the troubles, tank fire was used to quell the protests and something like a siege put in place. Electricity and water were cut off and food became scarce.

The deaths in Daraa and elsewhere -- and the emotional funeral processions that followed -- have clearly aroused great rage in the population and a thirst for revenge. President Bashar al-Assad's legitimacy has been eroded. A strident call is ringing out increasingly for the fall of the regime. The president is now fighting for his political life and for that of the regime put in place in 1970 by his father, the late President Hafez al-Assad.

Forty-one years in power

The rule of the Assads, father and son, has now lasted 41 years, a score comparable to that of other long-lasting Arab autocrats, each apparently determined to be a président-à-vie. In no other part of the world have so many rulers clung so assiduously to power. Bashar appears genuinely to have believed that the Arab nationalist ideology he inherited, his opposition to Israel and his support for resistance movements such as Hizbullah in Lebanon and Hamas in Gaza, gave him immunity from popular discontent. In an interview with The Wall Street Journal on 31 January, he claimed that Syria could not be compared to Egypt. “Why is Syria stable,” he asked, “although we have more difficult conditions? Egypt has been supported financially by the United States, while we are under embargo by most countries of the world. We have growth although we do not have many of the basic needs for the people. Despite all that, the people do not go into an uprising. So it is not only about needs and not only about reform. It is about the ideology, the beliefs and the cause that you have. There is a difference between having a cause and having a vacuum.”

Unfortunately for Bashar, this analysis has proved wrong. As if caught unawares, his first public speech on 30 March was a public relations disaster. It was delivered to an obedient parliament, which interrupted him repeatedly with acclamation and crass plaudits. In an aside, he seemed to concede that external crises had distracted him from making the reforms he had intended when he first took office. In a second speech on 16 April to his newly appointed cabinet, he announced the lifting of the hated state of emergency, in force since the Ba’ath Party seized power in 1963, and the abolishing of the dreaded Special State Security Court. But even these moves came to seem half-hearted when it emerged that demonstrations could only be held with prior permission from the interior ministry.

The difficult and perilous task Bashar now faces is nothing less than the profound restructuring -- under great popular pressure -- of a fossilised system of governance inherited from his father, but which is no longer appropriate to the modern age, and no longer tolerated by the bulk of the population. Like other Arabs, Syrians want real political freedoms, the release of political prisoners, an independent judiciary, the punishment of corrupt bigwigs, a free press, a new law on political parties allowing for genuine pluralism (and the cancellation of article 8 of the constitution which enshrines the Ba'ath Party as "the leader of state and society"), and an end, once and for all, to arbitrary arrest, police brutality and torture.

Can Bashar meet these demands? Does he have the will and ability to do so? Can he hope to prevail over the entrenched interests of his extended family, of his intelligence and army chiefs, of powerful figures in his Alawite community, of rich Sunni merchants of Damascus traditionally allied to the Assad family, and of the small but powerful "new bourgeoisie," made rich by the transition from a state-controlled to a market-oriented economy, over which he has himself presided in the past decade? All these disparate forces want no change in a system which has brought them privilege and wealth. Above all, can Bashar change the brutal methods of his police and security forces? Could anyone in just a few weeks hope to change habits of repression ingrained over half a century, and indeed far longer? (For autocracy is not an Assad invention.)

The Bashar years

Until the outbreak of the crisis, Bashar al-Assad had little or nothing of the menacing pose of a traditional Arab dictator. His manner was modest and, at 45, he looked astonishingly young. His tall willowy frame has none of the robustness of a fighter, while his gaze, questioning and often perplexed, has none of the certainties of a man born to power. He was a young doctor studying ophthalmology in London when the accidental death in 1994 of his elder brother, Basil, an altogether tougher character who was being groomed for the succession, propelled him somewhat reluctantly onto the political scene.

The country he came to rule in 2000 seemed backward in an increasingly globalised and technologically advanced world. His first reforms were therefore financial and commercial. Mobile phones and the internet were introduced. Private schools and universities proliferated. In 2004 private banks and insurance companies were allowed to operate for the first time, and a stock exchange was opened in March 2009. A political and economic alliance was forged with Turkey (and visas abolished), which allowed trade to grow along that border, benefiting Aleppo. The Old City of Damascus was revitalised, ancient courtyard houses restored and hotels and restaurants opened to cater for the growing number of tourists. Before the crisis erupted, Syria was negotiating to join the World Trade Organisation and conclude an association agreement with the European Union.

But Bashar’s years in power seem to have hardened him. He developed a taste for control -- control over the media, over the university, over the economy (through cronies such as his exorbitantly rich cousin Rami Makhlouf), control over society at large. Free expression is not allowed. Political decision-making is restricted to a tight circle around the president and security services. Like his father, Bashar clearly does not like to be pushed around or to seem to yield to pressure. Even so, many Syrians still support him in the belief that, as an educated, modern and secular ruler, he is better placed than most to bring about necessary change.

At the time of writing, Bashar still seems to have a chance, if a slim one, of stabilising the situation and perhaps earning a further spell in power -- but only if he calls a halt to the killing of protesters and takes the lead of the reform movement, and in effect carries out a silent coup against the hardliners.

But it may well be too late for that. Indeed, Bashar may already have lost authority to men like his brother, Maher al-Assad, commander of the regime's Republican Guard, who seems to advocate crushing the protests by force. If the army and the security services remain loyal, it will be difficult for the opposition to unseat the regime. But there have been ominous rumours of army defections as well as reports that some members of the Ba'ath Party have resigned.

It needs to be recognised that the Assad regime does have determined enemies, at home and abroad, who conspire against it in the neighbouring countries -- Lebanon, Jordan, Iraq, Saudi Arabia, and also Israel -- and among Syrian exiles in London, Paris and the US. These enemies have smelled blood. Riding on the turbulent wave of popular dissent, they will not easily give up. According to US diplomatic cables, released by WikiLeaks and published in mid-April in The Washington Post, the State Department secretly financed a London-based network of Bashar's opponents to the tune of $12m between 2005 and 2010.

A continuous whole

It is probably fair to view Bashar al-Assad's term of office and that of his father as a single continuous whole. Not only did Hafez al-Assad decide that Bashar should succeed him, but he also bequeathed to him an autocratic system based on an all-powerful centralising presidency, and a set of principles and external allies and opponents which together determine Syria's foreign policy. Bashar's whole career -- like that of his father before him -- has been shaped by Syria's contest with Israel. Syria has had to live, fight and survive in a hostile Middle East environment shaped by Israel’s overwhelming victory over the Arabs in the 1967 war, its seizure of extensive Arab territories including Syria’s Golan Heights and its subsequent close alliance with the United States, which put in place a sort of dual US-Israeli regional hegemony from which Syria and its allies have sought to free themselves ever since. The 1973 war waged by Egypt and Syria to recover lost territories and force Israel to negotiate a global peace had some initial success but failed to realise its objectives. Instead, Egypt made a separate peace with Israel in 1979 and was removed from the Arab line up. The rest of the region was then exposed to the full force of Israeli power.

Looking to its defences, Syria established a partnership in 1979 with the newborn Islamic Republic of Iran. And once Israel invaded Lebanon in 1982 in a bid to expel Syrian influence, destroy the PLO and bring Lebanon into its orbit, Syria found local allies among the Shia resistance movements of South Lebanon -- of which Hizbullah became the most prominent. Waging a guerrilla war, and benefiting from logistical support and weapons from Iran and Syria, Hizbullah managed to force Israel out of South Lebanon in 2000, after an 18-year occupation. From this was born the Tehran-Damascus-Hizbullah axis, which over the years grew into the principal regional challenger of the United States and Israel.

Both the United States and Israel have done their utmost to disrupt this axis and prevent it acquiring any effective deterrent capability: Iran has faced constant demonisation, sanctions and threat of military attack because of its nuclear programme, while Israel has made repeated attempts to destroy Hizbullah, including its war on Lebanon in 2006. Syria, in turn, has faced intimidation, isolation, US sanctions and an Israeli attack in 2007 on its alleged nuclear facility.

Bashar has had to wrestle with his own crises. He survived George W. Bush’s “global war on terror” after 9/11, then faced the greater ordeal of the 2003 US-led invasion of Iraq and the long occupation that followed. Had the United States been successful in Iraq, Syria would have been the next target, as pro-Israel neocons, the main architects of the Iraq war, had intended. Syria was then confronted by the 2005 Lebanese crisis, triggered by the assassination of former prime minister Rafik Hariri. Syrian forces were ousted from Lebanon and the Assad regime threatened with extinction by the combined pressures of the United States and France.

There is also a much older memory that still hangs like a dark cloud -- that of the massacres at Hama in central Syria in 1982. It was then that Hafez al-Assad put down, with great violence, an armed insurrection by the Muslim Brothers. Beginning in 1977, this Islamic group had launched a series of terrorist attacks against the regime, murdering several of the president's close associates and eventually seizing control of Hama, where they killed Ba'ath Party and government officials. The regime regained control of the town, but only after a bloodbath in which between 10,000 and 20,000 people lost their lives.

Thirty years later, some Islamists still dream of revenge, while minorities such as the Alawites fear that if the regime were to fall, they would be massacred in turn. Emerging from underground, the Muslim Brothers have now called on the people to join the protests. The cry for freedom risks being drowned by sectarian strife.

Such has been Bashar al-Assad's harsh apprenticeship. He has had to surmount a series of regime-threatening crises much like those his father confronted in his time. Both Assads felt some satisfaction at managing to survive them and thus provide Syria with a measure of stability and security, especially compared with Iraq and Lebanon. There was, however, a price to pay. Having to live and survive in a hostile environment inevitably conferred great powers on the security services, guardians of the regime -- to the increasing resentment of ordinary Syrians. A dialogue of the deaf ensued. The Assads' intense preoccupation with external crises led them to neglect the internal scene. Who would need political freedoms, they no doubt thought, if given the benefits of security and stability? As the regime's official daily newspaper Tishrin wrote on 25 April: "The most sublime form of freedom is the security of the nation."

The recent explosion of popular anger has evidently taken Bashar by surprise, as it did other Arab autocrats. He has had to wrench his attention away from the perils and excitements of foreign policy to urgent challenges at home. To devise and implement far-reaching domestic reforms, as the present situation urgently demands, will require a radical change of focus. It will not be easy, and a favourable outcome is far from certain. Bashar now faces an internal threat to his regime at least as dangerous as any of the external threats he and his father confronted so successfully.

Patrick Seale is a leading British writer on the Middle East. His latest book is The Struggle for Arab Independence: Riad el-Solh and the Makers of the Modern Middle East (Cambridge University Press).

Article 3.

NYT – Books

Mohamed ElBaradei, the Inspector

Leslie H. Gelb

THE AGE OF DECEPTION
Nuclear Diplomacy in Treacherous Times
By Mohamed ElBaradei
340 pp. Metropolitan Books/Henry Holt & Company. $27.

May 6, 2011 -- The Nobel laureate Mohamed ElBaradei has stated his intention to “nominate myself” to be president of Egypt, but this memoir will not improve his election prospects. In personal terms, it’s hard to imagine anything less thrilling to Egypt’s street revolutionaries than ElBaradei’s accounts of his meals (“The food was very basic, with few choices: noodles, meat and kimchi; no fruit or salad”) and accommodations (“a worn, drab-colored suite consisting of a bedroom and a salon”) in places like North Korea. Nor will his fellow Egyptians be much intrigued by the details of his battles against nuclear proliferators. At the moment, the protestors have other priorities.

On the other hand, foreign policy leaders and wonks everywhere will find plenty in this memoir to stir debates about the most vital task for global survival — the need to stop the spread of nuclear weapons, especially to rogue states and terrorists.

That quest is ElBaradei’s story. For decades he was an intimate participant in dramatic nuclear proliferation confrontations that dominated headlines. He served as a senior official at the International Atomic Energy Agency, the United Nations nuclear watchdog and inspection arm, for 13 years (1984-97) before rising to its director-generalship in 1997. He resigned in 2009 after completing his third term and announced his interest in running against President Hosni Mubarak in the election scheduled for this year. In 2005, he and the agency were jointly awarded the Nobel Peace Prize for their nonproliferation endeavors. Doubtless the Norwegian selectors, always ready to needle American hawks, also sought to reward his bold critique of the American-led war against Iraq, especially since they drew ill-tempered ripostes from top officials in the Bush administration, particularly “Dick Cheney and his faction.”

In many ways, this David-Goliath confrontation over Iraq both drove ElBaradei in his years atop the I.A.E.A. and also inspired this memoir. The Iraq story is well known. The Bush team insisted that Saddam Hussein — who had cheated on nukes and chemical weapons once before and been caught — had or was on the verge of acquiring nuclear weapons, and they demanded I.A.E.A. inspections of Iraq to confirm it. The agency conducted 247 inspections at 147 sites in Iraq from November 2002 until March 2003 and found no violations and no nuclear weapons. Nonetheless, the United States insisted on its own “evidence” and went to war. There can be no exaggerating the negative effects of this experience on world opinion toward the United States and upon ElBaradei himself as I.A.E.A. chief.

ElBaradei’s self-proclaimed mission became preventing another Iraq-type war. To this end, he significantly upgraded the agency’s inspection capabilities, building on the work of his predecessor, Hans Blix. At the same time, ElBaradei decried American counterproliferation efforts as warmongering. These campaigns provided the three themes of his memoir: the need to strengthen the mandate and standing of the I.A.E.A., to restrain sword-waving by the great powers (read the United States), and to emphasize diplomacy and collective security instead.

First, and not surprisingly, ElBaradei is well aware of the atomic energy agency's handicaps. For one, its inspections are generally restricted to Non-Proliferation Treaty members and only to those sites declared by those members. Extending this limited mandate to other sites requires a strong push from the United Nations Security Council. The agency has only some 2,300 employees, a very tight budget of about $450 million and limited intelligence-gathering resources. Of course, ElBaradei wants to buttress inspection authority and capabilities. He wants more intelligence-sharing from the big powers. He is particularly angry at Washington for not disclosing its intelligence that Syria was building a nuclear facility, and then for doing nothing to stop Israel from bombing that facility in 2007. He also pushes for tougher safeguards for nuclear material and for moving control of the developmental stages of the "fuel cycle" from national to international hands.

This is all sensible but probably not attainable. While the United Nations does a number of things quite well, it is not very adept or courageous when it comes to sensitive political matters and national prerogatives. Take, for example, the curious fact that the members of the United Nations Commission on Human Rights elected Libya to its chairmanship in 2003, despite its appalling record, because it was "Africa's turn." If this is how business is done, it is unlikely that the I.A.E.A.'s board of governors and the Security Council will ever endow the agency with the common-sense powers and capabilities ElBaradei wants.

Beyond this, ElBaradei insistently describes the United States and other great powers as more the problem than the solution. In a "new era, one characterized by clandestine activity and the willingness of some countries to blatantly deceive," the Iraq experience showed "that this deliberate deception was not limited to small countries ruled by ruthless dictators." ElBaradei goes on to fault the United

States for offering direct dialogue with North Korea while refusing talks with Iran "without preconditions."

He goes on to say that Washington does not seem to understand the actual causes of proliferation, which he writes "were rooted much deeper, in the extreme economic and social inequalities that prevailed between North and South . . . and the conflicts and tensions that continued to fester in specific regions." Those tensions certainly lead to proliferation, but "economic and social inequalities" have no detectable bearing on why Libya, North Korea, Pakistan, India, Iran, Syria and Israel have pursued nuclear programs.

ElBaradei passionately advocates making diplomacy the main recourse in counterproliferation — and he's right to do so. But when he argues that "the increasing distrust between different cultures" form the barrier to "an enduring and collective security" he's on shaky ground.

His credo is diplomacy above all else, for however long it takes and whatever the risk that nuclear weapons will be built in the meantime. He exhibits more sympathy for non-Western proliferators and their needs than for the major powers and their security and political concerns. At times, his narrative comes close to condoning the motives of states that seek nuclear weapons. "Iran's goal is not to become another North Korea — a nuclear weapons possessor but a pariah in the international community — but rather Brazil or Japan, a technological powerhouse with the capacity to develop nuclear weapons if the political winds were to shift, while remaining a nonnuclear weapons state," he writes. As for Iran's concealing its nuclear program at Natanz, he says Iran "was not intending to 'hide' it per se."

And he adds his voice to those who contend that the fight against proliferation can't succeed unless the established nuclear powers (above all, America and Russia) reduce their stockpiles and move toward nuclear disarmament. It will be many moons and unerringly effective inspections before leaders in Washington and Moscow contemplate such a course. Surely ElBaradei knows this. Nonetheless, “The Age of Deception” provides the grist for serious debate even as it helpfully chronicles the International Atomic Energy Agency’s journey and tribulations as it evolved from a relatively obscure group of technicians into an organization with growing international clout. But if those following in ElBaradei’s path think they can combat proliferation without the major powers — particularly the United States — assuming a central role, they are wrong. Checking proliferation will require more innovative and tighter cooperation between the agency ElBaradei loves and the United States, of which he no longer seems especially fond.

Leslie H. Gelb is president emeritus of the Council on Foreign Relations, a former senior official in the State and Defense Departments, and a former New York Times columnist.

Article 4.

Vanity Fair

Hillary Clinton - Woman of the World

Jonathan Alter

June 2011 -- It was four a.m. when Hillary Clinton’s plane touched down at Andrews Air Force Base, and by midmorning she was in the Oval Office conferring with President Obama. The night before, as her plane was en route from Tunis, they had agreed that the vote of the United Nations Security Council to impose a no-fly zone on Libya meant that it was now decision time on launching a third American war in the Middle East, though no one in the U.S. government dared call it that. Muammar Qaddafi was ramping up his genocidal threats, pledging to show “no mercy” toward his own people (whom he described as “rats”) in the eastern city of Benghazi. Inside the White House, the president quickly settled on an American bombing campaign, but he and the secretary of state thought strongly that Great Britain and France should be seen as taking the lead. They agreed that there was no choice but for Hillary to sit down in person with both British prime minister David Cameron and French president Nicolas Sarkozy. “I’m sorry, Hillary, but you’re going to fly over the Atlantic again,” said Obama, who was about to leave on his own foreign trip, to Brazil. So only hours after landing from Tunis, she was headed back to Paris.

By then it was clear that the “Arab Spring” of 2011 was creating tumult not just in the Middle East but inside the Obama administration. Not since the fall of Communism, in the late 80s, has a U.S. administration faced a chain reaction of foreign crises that seemed so much out of its control.

At first, Hillary looked clairvoyant: in January, when the street protests were still small in Tunisia, she lectured decrepit dictatorial regimes at a conference in Qatar that “the region’s foundations are sinking into the sand.” Within days, demonstrators filled Cairo’s Tahrir Square, a vibrant plea for greater freedom that swiftly spread to Jordan, Yemen, Bahrain, Oman, Libya, and eventually even Syria. But if Madam Secretary could be ahead of the curve, she was also sometimes behind it, caught in a dizzying series of upheavals that left her both exhilarated and exhausted. In early February, Hillary said the regime of Hosni Mubarak was “stable”; he was gone 17 days later. When she felt White House officials were pushing too hard in public statements for Mubarak to resign, Hillary complained to President Obama, who was unmoved. Yet on the big picture, especially the need to isolate the menacing regime in Tehran, the president and his secretary of state fully agreed. They understood immediately that, for all the facile accusations of inconsistency and hypocrisy, a one-size-fits-all foreign policy wouldn’t work. Doctrines, they felt, were for the doctrinaire.

Hillary had been one of the first in the administration to privately raise the issue of a no-fly zone. But she retreated when her main ally in the Cabinet, Defense Secretary Robert Gates, loudly and publicly said a no-fly zone would mean attacking ground positions, and it was a bad idea to get involved in Libya. The White House was searching for a way to arm the rebels—a strategy Hillary found problematic—but also resisted a no-fly zone. “Lots of people throw around phrases like no-fly zone. They talk about it as though it’s just a video game,” White House chief of staff Bill Daley said dismissively.

Hillary decided to push her case on March 12, after the Arab League voted to request action from the U.N. Security Council—an extraordinary decision to break Arab ranks and ask the nations they had for so long denounced as colonialists to help. “Their statement moved her,” said a close aide, adding that two meanings of “moved” applied.